

AUTHOR INDEX

A

- Aamodt, L. G., 95, 153, 158
 Abraham, B. M., 3, 22, 78
 Abrahams, S. C., 227, 244
 Ackermann, P., 299
 Adamson, A. W., 320, 321,
 323, 324, 325, 328, 329,
 330, 332, 336
 Adcock, W. A., 300
 Addario, M. M., 89
 Adler, F. T., 419
 Aellon, R., 276
 Agius, P., 267
 Agnew, H. M., 94
 Alberman, K. B., 249
 Albers, V. M., 377
 Alberty, R. A., 47, 408, 409,
 410, 411
 Alburger, D., 95
 Alder, M. G., 281
 Aldrich, L. T., 3, 70, 74, 78
 Alexander, A. E., 276
 Alexander, B., 414
 Alfin-Slater, R. B., 68
 Algera, L., 365, 369
 Ali, S. Z., 249
 Allen, A. O., 109
 Allen, G. A., 350
 Allen, H. A., 68
 Allen, J. A., 290
 Allen, P. W., 220
 Allsopp, C. B., 114
 Alpen, E. L., 145
 Alper, T., 114
 Altmann, S. L., 142
 Alvarez, L. W., 91, 93
 Ambie, E., 157, 160, 161,
 224
 Ambrose, D., 280
 Amis, E. S., 276
 Amphlett, C. B., 108, 109,
 110, 113
 Amundson, N. R., 257, 332
 Andersen, J. R., see
 Rastrup-Andersen, J.
 Anderson, C. M., 10
 Anderson, E. A., 410
 Anderson, H. C., 300
 Anderson, H. G., 348
 Anderson, J. S., 249, 297
 Anderson, L. H., 246
 Anderson, P. W., 169
 Anderson, R. B., 300
 Anderson, R. S., 152, 157
 Anderson, W. E., 155, 158,
 160, 226
 Andersson, G., 249
 Andrew, E. R., 230
 Andrews, L. J., 58, 59, 249
 Anfinson, C. B., 413
 Anson, M. L., 365, 369
 Appleyard, R. K., 102
 Arbad, K., 143
 Ardis, A. E., 264
 Argersinger, W. J., Jr., 325
 Arlman, E. J., 265, 354
 Armstrong, L. D., 9
 Armstrong, R., 275
 Armstrong, S. H., Jr., 5,
 411
 Armstrong, W. D., 73
 Arnett, E. M., 276
 Arnold, J. R., 181
 Arnold, R. D., 3, 60
 Arnold, W., 365, 369, 373,
 377
 Arnon, D. I., 365, 366, 369
 Aronoff, S., 363, 365, 369
 Arthur, J. S., 9
 Ashkinasi, M. S., 376
 Ashworth, J. N., 419
 Aston, J. G., 2, 9, 13
 Attack, D., 29, 62
 Atteberry, R. W., 335, 336
 Attree, R. W., 73
 Auer, E. E., 353
 Auerbach, I., 277
 Aurivillius, B., 249
 Austin, A. T., 281
 Autler, S. H., 152, 157
 Ayers, B., 334

B

- Bachman, K. C., 28
 Bachmeyer, K., 246
 Bacon, G. E., 235
 Badger, R. M., 225, 227
 Badin, E. J., 259, 268
 Baenziger, N. C., 246
 Baertschi, P., 70
 Bagdasar'yan, Z. A., 11
 Bagge, E., 88
 Bailey, C. R., 220
 Bailey, E. D., 408
 Baird, D. H., 152, 159, 165
 Bak, B., 158, 159
 Baker, C. L., 31
 Balandin, A. A., 293
 Baldock, G. R., 140
 Baldt, R., 292
 Baldwin, D., 322, 324, 335,
 336
 Baldwin, R. L., 408, 409,
 414
 Ball, A. F., 9
 Baltzly, R., 277
 Bamford, C. H., 346, 351,
 399
 Bardeen, J., 159, 160, 200
 Bardwell, J., 274
 Barieau, R. E., 4
 Barker, E. F., 226
 Barker, K. H., 77, 331
 Barnes, B. A., 414
 Barnes, C. E., 265
 Barrat, S., 61
 Barredo, J. M. G., see
 Gonzalez-Barredo, J. M.
 Barrer, R. M., 288, 309
 Barrett, C. S., 200, 201
 Barrett, E. P., 289
 Barrón, E. S. G., 108, 114,
 116
 Barrow, R. F., 13
 Barry, R. E., 329
 Bartell, F. E., 288
 Bartholomew, G. A., 89
 Bartlett, P. D., 259, 262,
 264, 280, 353
 Barton, D. H. R., 267
 Bass, A. M., 142, 143
 Bassham, J. A., 363
 Bastiansen, O., 222, 226
 Batchelder, A. C., 404
 Bates, R. G., 47, 48
 Batzel, R. E., 88
 Bauer, N., 68
 Bauer, S. H., 217, 218, 223,
 224, 226
 Bauer, T. W., 9
 Baumann, W. C., 314, 315,
 317, 318, 320, 322, 324,
 325, 328, 329
 Bawn, C. E. H., 392, 396,
 397
 Bayliss, N. S., 59, 135, 185
 Beach, J. Y., 217, 223, 226,
 228, 229
 Beamer, W. H., 246
 Bean, E. H., 300
 Bear, R. S., 420
 Beard, C. I., 158, 160, 225
 Beard, J. W., 409
 Beattie, J. A., 1, 22
 Beaver, J. J., 4
 Becker, E. I., 317
 Becker, E. W., 74, 75
 Becker, G. E., 157
 Beebe, R. A., 8, 288
 Beeck, O., 70, 71, 290, 293,
 294, 298, 303
 Beeman, W. W., 409
 Beenakker, J. J. M., 3
 Beers, Y., 157
 Beggerow, G., 76
 Beijer, I. J., 365, 369
 Bell, E. R., 260, 355
 Bell, R. P., 247, 271, 272
 Beloff, A., 413
 Belton, J. W., 61
 Bender, R. S., 169

- Benesi, H. A., 26, 54, 56, 57, 58, 59
 Bengner, M., 279
 Benischeck, J., 28, 61
 Bennett, R. B., 21
 Bennett, W., 275
 Bennett, W. S., 153
 Benning, A. F., 417
 Benson, A. A., 363, 372
 Bent, H. E., 22, 60
 Benzie, R. J., 5
 Berens, A. R., 276
 Berger, I. M., 277
 Bergman, B. G., 246
 Bergström, I., 77
 Beringer, R., 153, 157, 168, 170
 Berliner, E., 273
 Berliner, F., 273
 Bernal, J. D., 420
 Bernas, R. H., 77
 Bernier, R., 300
 Bernstein, H. J., 220, 222, 227
 Bernstein, R. B., 77
 Bersohn, R., 155, 160
 Bertaut, F., 246
 Berthier, G., 137, 141
 Bethe, H. A., 102, 187
 Betz, H. F., 25
 Beukenkamp, J., 335
 Bevan, D. J. N., 297
 Bevilacqua, E. B., 353
 Beyer, H. G., 235
 Beyerle, K., 76
 Bianco, D. R., 155, 158, 160, 225
 Bigeleisen, J., 13, 71, 72, 141
 Bijl, A., 1
 Binder, J. L., 14
 Birchenall, C. E., 2
 Bird, R. B., 2
 Birnbaum, G., 157
 Bissinger, W. E., 263
 Biswas, S., 90
 Bjorklund, R., 95
 Blacet, F. E., 345, 346, 347, 356
 Blackburn, P., 2, 23
 Blade, E., 13, 165, 230
 Blake, C. A., Jr., 44
 Blaker, R. H., 405
 Blatz, L. A., 410
 Bleaney, B., 151, 153, 157, 158, 168, 169
 Blinks, L. R., 376
 Bloch, F., 102, 191
 Bloch, R., 26
 Blocher, J. M., Jr., 2
 Block, R. J., 333
 Blockinzew, D., 170
 Blum, P., 246
 Blyumenfel'd, L. A., 139, 143, 144
 Boardman, H., 259
 Bobtelsky, M., 6
 Bockeris, J. O., 320
 Bodenstein, M., 257
 Boedeker, E. R., 60
 Boer, J. de, 2, 3
 Boer, J. H. de, 418
 Bohr, N., 86
 Boichenko, E. A., 364
 Boissonnas, C. G., 383
 Bokhovkin, I. I., 23
 Bokhovkin, I. M., 31
 Bokhovkina, Y. I., 31
 Bolhofer, W. A., 336
 Bolland, J. L., 258
 Bommer, E. A., 295
 Bonet-Mauray, P., 108
 Bonner, F., 299
 Bonner, N. A., 87
 Bonner, O. D., 325
 Bonzell, V., 108
 Borelius, G., 11
 Boren, B., 246
 Bortner, H., 336
 Boschan, R., 280
 Bouchez, R., 335
 Boudart, M., 303
 Bowen, E. J., 145
 Bowman, J. R., 77
 Boyd, A. W., 154, 159, 181
 Boyd, B. E., 317, 318, 320, 321, 322, 323, 324, 325, 328, 329, 330, 332, 334, 335, 336
 Boyd, C. A., 62
 Boyd, G. E., 404
 Boyd, W. T., 75
 Boyer, R. F., 400
 Boyer-Kawenoki, F., 399, 400
 Boyland, E., 116
 Boys, S. F., 181
 Bradt, H. L., 95
 Brady, E. L., 95
 Brady, O. L., 276, 279, 280
 Bragg, J. K., 155, 157, 158, 159, 160, 223
 Branch, G. E. K., 126
 Branner, A. V., 33
 Brattsten, L., 408, 409
 Braude, E. A., 135, 145
 Braune, H., 221
 Bregman, J. I., 321, 322, 324
 Bremner, J. G. M., 296
 Brewer, A. K., 76, 294
 Brewer, L., 2, 10, 11
 Brice, B. A., 405
 Brickwedde, F. G., 11
 Bridgman, P., 246
 Briggs, D. R., 408, 411
 Brightsen, R. A., 69
 Brillouin, L., 191, 192
 Brimley, R. C., 336
 Brin, G. A., 376, 377
 Brindley, G. W., 249
 Brinkley, S. R., Jr., 48, 257
 Brinton, R. K., 346, 347
 Briscoe, H. V. A., 74
 Broadbent, H. S., 264, 353
 Brockway, L. O., 223, 224, 225, 248
 Broda, E., 83, 101
 Broers, G. H. J., 60
 Brokaw, R. S., 259
 Bromley, L. A., 11
 Brønsted, J. N., 55, 269, 270
 Brooker, L. G. S., 126, 128, 129, 130, 131, 132, 133, 141
 Brooks, I. A., 369
 Brooks, R. E., 116
 Brooksbank, W., 335
 Brotz, W., 299, 300
 Brown, A., 404, 412
 Brown, A. H., 363, 364
 Brown, C., 11
 Brown, H. C., 274, 275
 Brown, R. A., 409
 Brown, R. D., 137
 Brown, R. K., 414
 Browning, L. C., 299
 Brozer, W., 420
 Brueckner, K., 94
 Bruijn, H. de, 291
 Brunauer, S., 288, 416, 417
 Bruylants, P., 133
 Bryden, J. H., 416
 Bücher, T., 405
 Buck, F. A. M., 222
 Bueche, A. M., 397
 Buehler, R. J., 63
 Buerger, M. J., 243, 244, 249
 Buff, F. P., 52, 61, 418, 419
 Buntun, C. A., 273
 Burg, A. B., 158, 160, 226
 Burgy, M. T., 240
 Burk, D., 371, 372, 373
 Burket, J. C., 227
 Burkhall, J. H., 152, 157
 Burnett, G. M., 353, 354
 Burnett, W. T., 99
 Burns, W. G., 346
 Burton, M., 99, 100
 Butler, C. G., 115
 Butler, C. L., 114
 Butler, J. A. V., 114, 115, 116
 Butler, T. A., 333, 334
 Buzzell, A., 248
 Byrne, F. P., 277
 Bystrom, A., 249
 Bystrom, A. M., 249

C

- Calingaert, G., 57
 Calvin, M., 71, 73, 135, 144, 262, 363, 372
 Campbell, D. H., 405
 Campbell, I. E., 2
 Cann, J. R., 409
 Cannan, R. K., 336
 Cannon, W. F., 157, 169
 Cardwell, P. H., 416
 Carlson, A. G., 95
 Carman, P. C., 292

- Carpenter, G. B., 244
 Carron, M., 329
 Carson, A. S., 12
 Carter, C. E., 336
 Carter, R. L., 153, 157, 169
 Case, K. M., 94
 Cass, W. E., 261
 Cassidy, H. G., 336
 Castle, J. G., Jr., 153, 157, 168, 170
 Catcheside, D. G., 114
 Caunt, A. D., 13
 Cecil, R., 407, 412
 Chalmers, T. A., 114
 Chamberlain, C., 241
 Chamberlain, O., 94
 Chance, B., 256, 257, 414
 Chang, T. L., 25
 Chao, C. Y., 95
 Chapiro, A., 105
 Chapman, P. R., 297
 Char, T. L. R., see
 Rama Char, T. L.
 Christian, R. S., 94
 Christie, J. H., 116
 Cichelli, M. T., 77
 Cilento, G., 60
 Citarel, L., 317
 Claassen, H. H., 222
 Claesson, S., 332
 Clar, E., 141
 Clark, G. L., 108, 109
 Clarke, J. T., 9, 263
 Coates, J. I., 331, 335
 Coates, R. J., 153
 Cobble, J. W., 336
 Cochran, W., 244, 245
 Coe, W. S., 108
 Coester, F., 162
 Coffin, C. C., 45
 Coffin, E. M., 145
 Cohen, K., 75
 Cohen, S. G., 263
 Cohen, S. J., 336
 Cohen, V. W., 152, 153, 157, 164
 Cohn, E. J., 414
 Cohn, E. M., 300
 Cohn, W. E., 332, 333, 335, 336
 Colburn, C. B., 291
 Cole, L. G., 10
 Cole, W. A., 294
 Coles, D. K., 151, 153, 157, 158, 159, 161, 165, 166, 222, 230
 Coles, K. F., 28, 60
 Collet, H., 31
 Collie, C. H., 101
 Collier, F. N., Jr., 6, 48
 Collins, C. B., 70
 Collinson, E., 106, 107, 112, 115
 Compaan, K., 2
 Condon, E. U., 140
 Condon, F. E., 69
 Conner, A. Z., 28, 61
 Conway, B. E., 114, 115
 Cook, C. S., 94
 Cook, L. J., 86
 Cooke, A. H., 5
 Coon, J. H., 70
 Coops, J., 10
 Cope, A. C., 280
 Corey, R. B., 228, 244, 249, 412
 Cork, B., 94
 Cornforth, J. W., 73
 Cornwell, C. D., 157, 158
 Corrin, M. L., 415
 Coryell, C. D., 334
 Cosgrove, J. D., 325
 Cotman, J. D., Jr., 262
 Cottrell, A. H., 187
 Cottrell, T. L., 266
 Coughlin, J. P., 9
 Coulson, C. A., 135, 136, 181, 406
 Couper, A., 295, 296
 Cousin, C., 105
 Cowan, H. D., 275
 Cox, A. L., 26, 56
 Cox, E. G., 242, 244
 Cox, J. T., 406
 Craig, D. P., 137, 138, 139, 141, 142, 143, 144, 184
 Crandall, W. E., 95
 Crawford, B. L., Jr., 138, 139, 156, 160, 184
 Crawford, V. A., 288
 Craxford, S. R., 300
 Cremer, E., 292
 Cressman, H. W. J., 130, 131, 132
 Crocker, I. H., 70
 Crockford, H. D., 7, 47
 Cromwell, T. M., 11, 59
 Cropper, F. R., 276
 Crowe, G. A., Jr., 281
 Crowe, R. W., 4, 230
 Crowfoot, D., 409
 Cruickshank, A. J. B., 33
 Cruickshank, D. W. J., 244
 Culbertson, O. L., 26
 Cullis, C. F., 258, 274
 Cunningham, B. B., 87, 92, 334
 Cunningham, G. L., 154, 159, 181
 Currie, C. C., 224
 Curtiss, C. F., 63
 Cvejanovich, G. J., 274

 D
 Dacey, J. R., 352
 Dahl, L. A., 33
 Dailey, B. P., 154, 155, 156, 157, 158, 159, 160, 161, 163, 165, 180, 220, 223, 224, 225, 226
 Dain, B. F., 376
 Dainton, F. S., 9, 99, 102, 106, 107, 112, 113, 115, 346, 355
 Dakin, T. W., 157
 Dale, W. M., 99, 116, 117
 D'Alelio, G. F., 312
 Danby, C. J., 350, 354
 Dancoff, S. M., 89
 Daniels, F., 71, 255, 268, 269, 333, 359, 370, 373
 Darby, J., 5
 Darken, L. S., 7, 30
 Darwent, B. de B., 272, 344, 345, 346, 350, 351
 Dauben, C. H., 246, 249
 Daunt, J. G., 3, 5, 78
 Davidson, A. W., 325
 Davidson, N. R., 248
 Davidson, W. J., 325
 Davidson, W. L., 241
 Davies, C. W., 77, 325, 333
 Davies, J. V., 99, 116, 117
 Davies, R. H., 75
 Davis, E. A., 369
 Davis, L. E., 325
 Davydov, A. S., 136, 138
 Day, A. R., 276
 Day, H. O., 2
 Day, M. J., 100, 111
 de Boer, J., see
 Boer, J. de
 de Boer, J. H., see
 Boer, J. H. de
 de Bruijn, H., see
 Bruijn, H. de
 Debye, P., 40, 41, 162, 404, 415
 Decker, H. C. J. de, 249
 de Decker, H. C. J., see
 Decker, H. C. J. de
 Defay, R., 62
 de Groot, S. R., see
 Groot, S. R. de
 de Heer, J., see
 Heer, J. de
 de Klerk, D., see
 Klerk, D. de
 De La Mare, P. B. D., 273
 Delbanco, A., 269
 Dempster, A. J., 91
 Denbigh, K. G., 257
 Dennison, D. M., 156, 230
 Deno, N. C., 274
 Dent, S. G., Jr., 131, 132, 133
 de Quevedo, G. J. L., see
 Quevedo, G. J. L. de
 Derouaue, G., 414
 Desai, A. M., 32
 Deutsch, M., 95
 Deutsch, M. L., 154, 157

- De Vault, D., 331
 Devonshire, A. F., 54, 63
 de Vries, J. L., see
 Vries, J. L. de
 DeVries, T., 12, 26, 56
 Dewar, M. J. S., 137, 249,
 278, 346
 DeWitt, B. J., 263
 DeWitt, T. W., 299, 300, 370,
 373
 Dial, W. R., 263
 Dibeler, V. H., 70
 Dicke, R. H., 152, 153, 169
 Dickel, G., 74, 77
 Dickenson, A. F. T., see
 Trotman-Dickenson, A. F.
 Dickey, F. H., 288
 Dickinson, R. G., 346
 Dickman, S., 114, 116
 Diepen, G. A. M., 61
 Dijkgraaf, L. L., 31
 Dikun, P. P., 142, 143, 144
 Dilke, M. H., 12
 Dillon, R. L., 273
 Dinegar, R. H., 418
 Dingemans, P., 31
 Dingle, J. R., 268
 Dixon, J. K., 292, 301
 Doak, K. W., 265
 Dobay, D. G., 288
 Dobres, R. M., 280
 Dobry, A., 399, 400
 Dodd, R. E., 344, 346
 Doering, W. von E., 277
 Dokoupil, Z., 3
 Dole, M., 44, 70, 407
 Donahue, J., 228
 Donnan, F. G., 326
 Donnay, G., 249
 Donohue, J., 242, 244, 249
 Dorfman, L. M., 267, 344,
 345
 Dorrestein, R. T., 379
 Doty, P., 9, 397
 Doty, P. M., 420
 Doub, L., 141, 145
 Douglas, A. M. B., 213, 245
 Douglas, C. H., 100
 Douglas, D. L., 358
 Douglas, T. B., 9
 Dowden, D. A., 295, 296, 298
 Drake, L. C., 302
 Drakin, S. I., 11
 Draper, J. D., 278
 Drenan, J. W., 55
 Drickamer, H. G., 74
 Duckworth, H. E., 68
 Duffield, R. B., 74
 Duffy, G. H., 180
 Duggar, B. M., 370, 373, 378
 Duke, J. R. C., 250
 Dunbar, P. M., 280
 Duncan, A. B. F., 145
 Duncan, J. F., 310, 324, 325
 Dunitz, J. D., 225
 Dunlap, G. W., 73
 Dunlap, R. D., 5, 56
 Dunning, J. R., 235
 Dunshee, B., 73
 Dunworth, W. P., 296
 Durham, R. W., 358
 Dutton, H. J., 376, 378
 Duysens, L. N. M., 379
 Dyatkina, M. E., 247
 Dye, J. L., 334
- E
- Eastes, J. W., 311
 Eastman, E. D., 11
 Ebert, L., 6
 Eckstrom, H. C., 300
 Edelhoch, H., 405, 411
 Edelson, D., 46
 Edgell, W. F., 158, 218, 221,
 222
 Edsall, J. T., 405, 411, 414
 Edwards, D. G., 1
 Edwards, F. G., 261
 Edwards, G., 2
 Edwards, H. D., 157, 158,
 220, 222, 225
 Edwards, J. W., 245
 Egan, E. P., Jr., 9
 Eggebert, W. S., see
 Seelmann-Eggebert, W.
 Ehrlich, P., 249
 Ehrmantraut, H. C., 364,
 368, 369, 370
 Eichhoff, H. T., 373
 Elchorn, J., 314, 322, 325,
 328, 329
 Eiland, P. F., 243
 Eilers, H., 417
 Eirich, F., 276
 Ekedahl, E., 325, 332
 Ekegren, S., 9
 Eley, D. D., 12, 288, 289,
 290, 295, 296, 299
 Elgin, J. C., 266
 el Komoss, S. G., see
 Komoss, S. G. el
 Ellefsen, Ø., 226
 Ellenbogen, E., 412
 Elliott, H. A., 408, 412
 Elliott, N., 248
 Elmore, K. L., Sr., 9
 Elofson, R. M., 265
 Elving, P. J., 28, 61
 Elyash, E. S., 157
 Emerson, R., 369, 370, 371,
 375, 376, 377
 Emmett, P. H., 288, 290,
 294, 295, 296, 299, 300,
 416, 417
 Engelhardt, F., 299
 Engelhardt, G., 61
 Engle, O., 3
 English, A. C., 44, 407
 Epstein, L. F., 61
 Epstein, S., 68
 Erber, J., 101
 Eriks, K., 249
 Eriksson-Quensell, I.-B., 413
- E
- Ermolaev, V. L., 142
 Erway, J., 281
 Erway, N. D., 2
 Eshback, J. R., 157
 Essex, H., 104
 Esteve, R. M., Jr., 272
 Eubank, W. R., 33
 Eucken, A., 6, 291, 294
 Evans, A. G., 301
 Evans, M. G., 13, 61, 244,
 265, 344, 358
 Everett, D. H., 8, 288
 Ewart, R. H., 406
 Ewing, F. J., 241, 246
 Ewing, W. W., 6
 Eyring, H., 140, 291, 368
 Eyring, L., 10
 Eyster, E. H., 224
- F
- Fager, E. W., 363
 Faidysh, A. N., 143
 Failley, C. F., 25, 60
 Fairbank, H. A., 3, 78
 Fairbrother, F., 58
 Falkoff, D. L., 95
 Faltings, V., 76, 83
 Fan, C. S., 370
 Fankuchen, I., 226, 420
 Fano, L., 69
 Fano, U., 102, 162
 Farkas, A., 262
 Farkas, L., 26
 Farmer, F. T., 99
 Farnham, N., 281
 Farr, L. E., Jr., 419
 Farrington, P. S., 26
 Feenberg, E., 95
 Feinstein, R. N., 114
 Feld, B. T., 160
 Feller, M., 28
 Felsing, W. A., 2, 47
 Fenimore, C. P., 142
 Feofilov, P. P., 141, 144,
 377
 Ferguson, L. N., 132
 Fergusson, R. R., 288
 Fernbach, S., 86
 Ferris, R. C., 348
 Ferry, J. D., 419
 Ferry, R. M., 419
 Fick, A., 38
 Fick, J., 264
 Figard, P., 333
 Fillmore, F. L., 94
 Fineman, M., 63
 Finke, H. L., 2, 9, 13
 Fischer, H., 374
 Fischer, O., 6
 Fisher, B. B., 54, 56
 Fisher, N. I., 125
 Flammersfeld, A., 69
 Fletcher, R. S., 274
 Flood, H., 11
 Flood, V., 108
 Flory, P. J., 52, 383, 384,

- 385, 390, 391, 394, 395,
397, 398, 399, 400, 401,
404, 419, 420
Fock, V., 183
Foex, M., 246
Fontell, V., 7
Fordham, J. W. L., 264
Forro, F., 114
Forsbergh, P. W., Jr., 21
Forsberg, A., 108, 116
Forstat, H., 102
Förster, T., 123, 126, 137,
143, 144, 377
Foster, F. C., 265
Foster, W. R., 250
Fournet, G., 409
Fowler, R. H., 383
Fox, T. G., Jr., 397, 399,
400
France, H., 133
Franck, J., 102, 144, 363,
364, 366, 369, 370, 372
Frank, H. F., 396, 397
Frankel, S., 95
Franzen, W., 102
Frashier, L. G., 330
Frazer, B. C., 242
Fredericq, E., 412
Fredrikse, H. P. R., 8
Freed, S., 143
Freeman, J. J., 153
Freeman, R. F. J., 392, 396,
397
French, C. S., 364, 365, 366,
368, 369, 370, 379
Frenkel, J., 88
Fretter, W., 95
Freundlich, H. F., 99
Frey, S. E., 27
Freyman, M., 151
Freyman, R., 151
Fricke, H., 108, 109
Friedel, R. A., 68, 300
Friedlander, G., 95
Friedman, A. S., 1, 22
Friedman, L., 13, 70, 72
Friess, S. L., 281
Fristrom, R., 152
Fry, A. J., 262
Fuchs, K., 199
Fujii, P. S., 10
Fulmer, E. I., 333, 334
Fuoss, R. M., 41, 46, 48
Furry, W. H., 74
- G
- Gable, C. M., 25
Gaddis, C. L., 145
Gaffron, H., 363, 369, 373,
377
Galanin, M. D., 144, 377
Galbraith, W., 88
Gamow, G., 95
Ganguly, S. C., 145
Gans, R., 309
Gardner, W., 93
Garforth, F. M., 142
Garikian, G., 54
Garner, W. E., 303
Garrett, C. G. B., 5
Garrido, J., 244
Garwin, L., 31
Garwin, R. L., 95
Gay, R., 244
Gee, G., 258, 392, 393, 400
Geller, S., 242, 248
Gelles, E., 272
George, W. D., 153
Gergel, M. V., 84
German, V. L., 136
Gerritsen, A. N., 103
Gerster, J. A., 27
Geschwind, S., 152, 153, 157
Ghiorso, A., 87, 89, 90, 91,
92
Ghosh, B. N., 266
Ghosh, J. C., 108
Giauque, W. F., 4
Gibson, J. D., 27
Giguere, P. A., 25
Gilbert, C. W., 99, 117
Gilbert, D. A., 157, 164
Gilbert, E. C., 10
Gilbert, L., 115
Gilfert, W., 300
Giller, E. B., 74
Gilles, P. W., 2, 11
Gillespie, J. M., 414
Gillette, R. H., 224
Gilliam, O. R., 152, 153, 157,
158, 220, 222, 225
Gillis, J., 243, 321
Gillot, R. J., 244
Gilmont, R., 30
Ginnings, D. C., 9
Glust, G. P., 14
Givens, J. W., 290
Gjaldhaek, J. C., 6, 59, 60
Gladrow, E. M., 332, 333
Gladstone, M. T., 262
Glanville, J. W., 27
Glasgow, A. R., Jr., 22
Glazer, J., 273
Glendenin, L., 334
Gliksman, T. S., 376
Glocker, R., 108
Glockler, G., 12, 155, 158,
160, 225
Glueckauf, E., 77, 310, 326,
331, 335
Gobush, M., 333
Goekermann, R. H., 87, 88
Goedkoop, J. A., 243
Goepfert-Mayer, M., 71, 88,
138, 142
Goff, G. H., 26
Goff, J. A., 14
Gofman, J. W., 408, 412
Goldblith, S. A., 100, 108,
116, 117
Golden, H. A., 63
Golden, S., 154, 155, 157,
160, 162
Goldhaber, G. S., see
Scharff-Goldhaber, G.
Goldhaber, M., 95
Goldman, J. E., 214
Goldstein, J. H., 158, 159,
225
Goldstein, K., 420
Goldstein, R., 414
Golumbic, N., 300
Gomer, R., 267, 268, 344,
345, 346, 347
Gonzalez-Barredo, J. M.,
226
Good, G. M., 301
Good, W. E., 153, 157, 158,
159, 166
Goodwin, T. W., 114
Gordon, A. R., 44
Gordy, W., 151, 152, 153,
155, 157, 158, 159, 160,
220, 222, 223, 224, 225,
226
Gorham, P. R., 365, 368,
369
Gorin, E., 345
Gorin, G., 226
Goring, J. H., 248
Gorman, J. G., 157
Gorter, C. J., 3, 4, 8
Gosting, L. J., 42, 44, 45,
406, 407
Gouy, G. L., 406
Graham, D. P., 417
Graham, G. A. R., 99
Graham, R. P., 70
Grahame, D. C., 345
Granath, K., 9
Granick, S., 365, 369, 374
Gratch, S., 14
Gray, L. H., 102, 117
Gray, T. J., 303
Grayson-Smith, H., 9
Greenhalgh, D. M. S., 242
Greensfelder, B. S., 301
Greenstein, J. P., 115
Greenwald, S., 238
Gregor, H. P., 317, 320, 321,
322, 324, 326
Gregory, B. P., 95
Grems, M. D., 242
Grenail, A., 300
Griessbach, R., 310, 312
Griffing, V., 138
Griffith, R. H., 297
Grilly, E. R., 3
Grisson, E., 249
Groot, S. R. de, 1
Gross, L., 94, 242
Gross, M. E., 2, 9, 13
Gross, P. M., Jr., 63, 226
Grosse, A. V., 83
Grossman, J. J., 329
Grosz, S. J., 263
Groth, W., 74, 75, 76, 352
Grube, G., 23
Grummitt, O., 264
Gucker, F. T., Jr., 48, 419

- De Vault, D., 331
 Devonshire, A. F., 54, 63
 de Vries, J. L., see
 Vries, J. L. de
 DeVries, T., 12, 26, 56
 Dewar, M. J. S., 137, 249,
 278, 346
 DeWitt, B. J., 263
 DeWitt, T. W., 299, 300, 370,
 373
 Dial, W. R., 263
 Dibeler, V. H., 70
 Dicke, R. H., 152, 153, 169
 Dickel, G., 74, 77
 Dickenson, A. F. T., see
 Trotman-Dickenson, A. F.
 Dickey, F. H., 288
 Dickinson, R. G., 346
 Dickman, S., 114, 116
 Diepen, G. A. M., 61
 Dijkgraaf, L. L., 31
 Dikun, P. P., 142, 143, 144
 Dilke, M. H., 12
 Dillon, R. L., 273
 Dinegar, R. H., 418
 Dingemans, P., 31
 Dingle, J. R., 268
 Dixon, J. K., 292, 301
 Doak, K. W., 265
 Dobay, D. G., 288
 Dobres, R. M., 280
 Dobry, A., 399, 400
 Dodd, R. E., 344, 346
 Doering, W. von E., 277
 Dokoupil, Z., 3
 Dole, M., 44, 70, 407
 Donahue, J., 228
 Donnan, F. G., 326
 Donnay, G., 249
 Donohue, J., 242, 244, 249
 Dorfman, L. M., 267, 344,
 345
 Dorreinstein, R. T., 379
 Doty, P., 9, 397
 Doty, P. M., 420
 Doub, L., 141, 145
 Douglas, A. M. B., 213, 245
 Douglas, C. H., 100
 Douglas, D. L., 358
 Douglas, T. B., 9
 Dowden, D. A., 295, 296, 298
 Drake, L. C., 302
 Drakin, S. I., 11
 Draper, J. D., 278
 Drenan, J. W., 55
 Drickamer, H. G., 74
 Duckworth, H. E., 68
 Duffield, R. B., 74
 Duffy, G. H., 180
 Duggar, B. M., 370, 373, 378
 Duke, J. R. C., 250
 Dunbar, P. M., 280
 Duncan, A. B. F., 145
 Duncan, J. F., 310, 324, 325
 Dunitz, J. D., 225
 Dunlap, G. W., 73
 Dunlap, R. D., 5, 56
 Dunning, J. R., 235
 Dunshee, B., 73
 Dunworth, W. P., 296
 Durham, R. W., 358
 Dutton, H. J., 376, 378
 Duysens, L. N. M., 379
 Dyatkina, M. E., 247
 Dye, J. L., 334
- E
- Eastes, J. W., 311
 Eastman, E. D., 11
 Ebert, L., 6
 Eckstrom, H. C., 300
 Edelhoch, H., 405, 411
 Edelson, D., 46
 Edgell, W. F., 158, 218, 221,
 222
 Edsall, J. T., 405, 411, 414
 Edwards, D. G., 1
 Edwards, F. G., 261
 Edwards, G., 2
 Edwards, H. D., 157, 158,
 220, 222, 225
 Edwards, J. W., 245
 Egan, E. P., Jr., 9
 Eggebert, W. S., see
 Seelmann-Eggebert, W.
 Ehrlich, P., 249
 Ehrmantraut, H. C., 364,
 368, 369, 370
 Eichhoff, H. T., 373
 Eichorn, J., 314, 322, 325,
 328, 329
 Eiland, P. F., 243
 Eilers, H., 417
 Eirich, F., 276
 Ekedahl, E., 325, 332
 Ekegren, S., 9
 Eley, D. D., 12, 288, 289,
 290, 295, 296, 299
 Elgin, J. C., 266
 el Komoss, S. G., see
 Komoss, S. G. el
 Ellefsen, Ø., 226
 Ellenbogen, E., 412
 Elliott, H. A., 408, 412
 Elliott, N., 248
 Elmore, K. L., Sr., 9
 Elofson, R. M., 265
 Elving, P. J., 28, 61
 Elyash, E. S., 157
 Emerson, R., 369, 370, 371,
 375, 376, 377
 Emmett, P. H., 288, 290,
 294, 295, 296, 299, 300,
 416, 417
 Engelhardt, F., 299
 Engelhardt, G., 61
 Engle, O., 3
 English, A. C., 44, 407
 Epstein, L. F., 61
 Epstein, S., 68
 Erber, J., 101
 Eriks, K., 249
 Eriksson-Quensel, I.-B., 413
- F
- Fager, E. W., 363
 Faldysh, A. N., 143
 Falley, C. F., 25, 60
 Fairbank, H. A., 3, 78
 Fairbrother, F., 58
 Falkoff, D. L., 95
 Faltings, V., 76, 83
 Fan, C. S., 370
 Fankuchen, I., 226, 420
 Fano, L., 69
 Fano, U., 102, 162
 Farkas, A., 262
 Farkas, L., 26
 Farmer, F. T., 99
 Farnham, N., 261
 Farr, L. E., Jr., 419
 Farrington, P. S., 26
 Feenberg, E., 95
 Feinstein, R. N., 114
 Feld, B. T., 160
 Feller, M., 28
 Felsing, W. A., 2, 47
 Fenimore, C. P., 142
 Feofilov, P. P., 141, 144,
 377
 Ferguson, L. N., 132
 Ferguson, R. R., 288
 Fernbach, S., 86
 Ferris, R. C., 348
 Ferry, J. D., 419
 Ferry, R. M., 419
 Fick, A., 38
 Fick, J., 264
 Figard, P., 333
 Fillmore, F. L., 94
 Fineman, M., 63
 Finke, H. L., 2, 9, 13
 Fischer, H., 374
 Fischer, O., 6
 Fisher, B. B., 54, 56
 Fisher, N. I., 125
 Flammersfeld, A., 69
 Fletcher, R. S., 274
 Flood, H., 11
 Flood, V., 108
 Flory, P. J., 52, 383, 384,

- 385, 390, 391, 394, 395,
397, 398, 399, 400, 401,
404, 419, 420
Fock, V., 183
Foex, M., 246
Fontell, V., 7
Fordham, J. W. L., 264
Forro, F., 114
Forsbergh, P. W., Jr., 21
Forsberg, A., 108, 116
Forstat, H., 102
Förster, T., 123, 126, 137,
143, 144, 377
Foster, F. C., 265
Foster, W. R., 250
Fournet, G., 409
Fowler, R. H., 383
Fox, T. G., Jr., 397, 399,
400
France, H., 133
Frank, J., 102, 144, 363,
364, 366, 369, 370, 372
Frank, H. F., 396, 397
Frankel, S., 95
Franzen, W., 102
Frashier, L. G., 330
Frazer, B. C., 242
Frederick, E., 412
Fredrikse, H. P. R., 6
Freed, S., 143
Freeman, J. J., 153
Freeman, R. F. J., 392, 396,
397
French, C. S., 364, 365, 366,
368, 369, 370, 379
Frenkel, J., 88
Fretter, W., 95
Freundlich, H. F., 99
Frey, S. E., 27
Freyman, M., 151
Freyman, R., 151
Fricke, H., 108, 109
Friedel, R. A., 68, 300
Friedlander, G., 95
Friedman, A. S., 1, 22
Friedman, L., 13, 70, 72
Friess, S. L., 281
Fristrom, R., 152
Fry, A. J., 262
Fuchs, K., 199
Fujii, P. S., 10
Fulmer, E. I., 333, 334
Fuoss, R. M., 41, 46, 48
Furry, W. H., 74
- G
- Gable, C. M., 25
Gaddis, C. L., 145
Gaffron, H., 363, 369, 373,
377
Galanin, M. D., 144, 377
Galbraith, W., 88
Gamow, G., 95
Ganguly, S. C., 145
Gans, R., 309
Gardner, W., 93
Garforth, F. M., 142
Garikian, G., 54
Garner, W. E., 303
Garrett, C. G. B., 5
Garrido, J., 244
Garwin, L., 31
Garwin, R. L., 95
Gay, R., 244
Gee, G., 258, 392, 393, 400
Geller, S., 242, 248
Gelles, E., 272
George, W. D., 153
Gergel, M. V., 84
German, V. L., 136
Gerritsen, A. N., 103
Gerster, J. A., 27
Geschwind, S., 152, 153, 157
Ghiorsio, A., 87, 89, 90, 91,
92
Ghosh, B. N., 266
Ghosh, J. C., 108
Giauque, W. F., 4
Gibson, J. D., 27
Giguere, P. A., 25
Gilbert, C. W., 99, 117
Gilbert, D. A., 157, 164
Gilbert, E. C., 10
Gilbert, L., 115
Gillert, W., 300
Giller, E. B., 74
Gilles, P. W., 2, 11
Gillespie, J. M., 414
Gillette, R. H., 224
Gilliam, O. R., 152, 153, 157,
158, 220, 222, 225
Gillis, J., 243, 321
Gillot, R. J., 244
Gilmont, R., 30
Ginnings, D. C., 9
Giusti, G. P., 14
Givens, J. W., 290
Gjaldbaek, J. C., 6, 59, 60
Gladrow, E. M., 332, 333
Gladstone, M. T., 262
Glanville, J. W., 27
Glasgow, A. R., Jr., 22
Glazer, J., 273
Glendenin, L., 334
Glikman, T. S., 376
Glocker, R., 108
Glockler, G., 12, 155, 158,
160, 225
Glueckauf, E., 77, 310, 326,
331, 335
Gobush, M., 333
Goekermann, R. H., 87, 88
Goedkoop, J. A., 243
Goepfert-Mayer, M., 71, 88,
138, 142
Goff, G. H., 26
Goff, J. A., 14
Gofman, J. W., 408, 412
Goldblith, S. A., 100, 108,
116, 117
Golden, H. A., 63
Golden, S., 154, 155, 157,
160, 162
Goldhaber, G. S., see
Scharff-Goldhaber, G.
Goldhaber, M., 95
Goldman, J. E., 214
Goldstein, J. H., 158, 159,
225
Goldstein, K., 420
Goldstein, R., 414
Golumbic, N., 300
Gomer, R., 267, 268, 344,
345, 346, 347
Gonzalez-Barredo, J. M.,
228
Good, G. M., 301
Good, W. E., 153, 157, 158,
159, 166
Goodwin, T. W., 114
Gordon, A. R., 44
Gordy, W., 151, 152, 153,
155, 157, 158, 159, 160,
220, 222, 223, 224, 225,
226
Gorham, P. R., 365, 368,
369
Gorin, E., 345
Gorin, G., 226
Goring, J. H., 248
Gorman, J. G., 157
Gorter, C. J., 3, 4, 8
Gosting, L. J., 42, 44, 45,
406, 407
Gouy, G. L., 406
Graham, D. P., 417
Graham, G. A. R., 99
Graham, R. P., 70
Grahame, D. C., 345
Granath, K., 9
Granic, S., 365, 369, 374
Gratch, S., 14
Gray, L. H., 102, 117
Gray, T. J., 303
Grayson-Smith, H., 9
Greenhaigh, D. M. S., 242
Greensfelder, B. S., 301
Greenstein, J. P., 115
Greenwald, S., 238
Gregor, H. P., 317, 320, 321,
322, 324, 326
Gregory, B. P., 95
Grems, M. D., 242
Grenall, A., 300
Griessbach, R., 310, 312
Griffing, V., 138
Griffith, R. H., 297
Grilly, E. R., 3
Grison, E., 249
Groot, S. R. de, 1
Gross, L., 94, 242
Gross, M. E., 2, 9, 13
Gross, P. M., Jr., 63, 226
Grosse, A. V., 83
Grossman, J. J., 329
Grossos, S. J., 263
Groth, W., 74, 75, 76, 352
Grube, G., 23
Grummitt, O., 264
Gucker, F. T., Jr., 48, 419

Guggenheim, E., 326
 Guggenheim, E. A., 7, 52, 61,
 62, 270, 363, 366, 387, 388,
 389, 390
 Gullmart, R., 145
 Guiner, A., 409
 Gunning, H. E., 350, 352
 Gurd, F. R. N., 414
 Gurevich, A. A., 366
 Gurnee, E. F., 182
 Gurry, R. W., 30
 Gutfreund, H., 412
 Guth, E., 230
 Guthrie, G. B., 2, 9, 13
 Gutmann, F., 2
 Gutoff, F., 320
 Gutowsky, H. S., 230, 247
 Gwinn, W. D., 154, 159, 181,
 227

H

Haag, R. M., 48
 Haas, V. A., 363
 Haase, R., 30, 63
 Haber, F., 295
 Hackett, J. W., 275
 Hacobian, S., 357
 Haden, W. L., 344, 346
 Hadley, J., 94
 Haendler, H. M., 30
 Haertsch, N., 33
 Hagdahl, L., 332
 Hagg, G., 241
 Hahn, H., 249
 Haissinsky, M., 108, 109,
 110, 113
 Hale, D. K., 313, 316, 324,
 329
 Hale, J. B., 220
 Halenda, P. P., 289
 Halford, J. O., 13, 164
 Hall, A. G., 363
 Hall, G. A., Jr., 276
 Hall, H., 102
 Hall, H. B., 143
 Hall, H. K., 401
 Hall, J. J., 116
 Hall, W. K., 300
 Hallett, N. C., 9
 Halpern, J., 102
 Halpern, O., 102, 235
 Halsey, G., 288
 Halsey, G. D., Jr., 288, 291,
 417
 Halwer, M., 405
 Hamer, F. M., 125
 Hamill, W. H., 358
 Hamilton, D. R., 94, 95
 Hamilton, J. G., 91
 Hammack, K. C., 95
 Hammel, E. F., 3
 Hammett, L. P., 12, 257,
 280, 321
 Hammond, G. S., 263, 278
 Hammond, V. J., 138, 145
 Hansford, R. G., 302

Hanson, E. M., 407
 Harding, J. B., 89
 Harker, D., 224, 228, 243,
 247
 Harkins, W. D., 69, 415
 Harned, H. S., 40, 41, 42,
 44, 45, 46, 48
 Harris, D. H., 332, 334
 Harrison, A. J., 145
 Hart, E. J., 108, 109, 353
 Hart, E. W., 94
 Hart, H., 278
 Harteck, P., 70, 76, 83
 Hartley, G. S., 38, 415
 Hartley, K., 6, 12, 59
 Hartman, M. G., 419
 Hartmann, H., 62, 138
 Hartree, D. R., 183
 Hartsough, W., 94
 Hartwig, S., 141
 Hartz, T. R., 153
 Harvey, J. A., 69
 Hashmall, F., 30
 Haskell, V. C., 321
 Hassel, O., 222, 226, 247
 Hastings, J. M., 70, 217,
 218, 223
 Hatton, J., 5
 Hatton, J. A., 10
 Hauffe, K., 61
 Hauptman, H., 243
 Haven, A. C., Jr., 280
 Havens, W. W., Jr., 235
 Hawk, C. O., 300
 Hawkins, J. E., 280
 Hayden, R. J., 68, 84
 Haymond, H. R., 91
 Haynes, W. S., 348
 Hayward, E., 94
 Haxo, F., 376
 Head, A. J., 267
 Heath, M., 277
 Hebb, M. H., 409
 Hedberg, K., 225
 Hedrick, L. C., 153
 Heer, C. V., 3, 5
 Heer, J. de, 244
 Heidt, L. J., 358
 Heinle, R. W., 116
 Heisenberg, W., 199
 Held, K., 320
 Heldman, J. D., 345
 Heller, W., 405
 Hellman, N. N., 288
 Hellner, E., 246
 Helmholz, L., 250
 Henderson, R. S., 156
 Hendley, D. D., 114
 Hendricks, S., 371, 372
 Henne, A. L., 277
 Herbert, D., 409
 Herbo, C., 299
 Hereford, F. L., 102
 Hermans, J. J., 55, 393
 Hermans, P. H., 419
 Hernandez, L., 296
 Hersh, H. N., 9

Hershberger, W. D., 153,
 157, 158, 159
 Hershfelder, J. G., 2
 Hertzberg, G., 6
 Herzberg, G., 222
 Herzfeld, K. F., 123, 136,
 348
 Hess, D. C., Jr., 68, 84
 Heuser, E., 277
 Hewitt, J. T., 125
 Heymann, E., 321
 Hickey, J., 300
 Hicks, H. G., 93
 Hicks, M., 257
 Hiester, N. K., 332
 Higgins, G. H., 334
 Higgins, H. C. L., see Lon-
 guet-Higgins, H. C.
 Higginson, W. C. E., 272
 Hildebrand, J. H., 5, 6, 22,
 26, 51, 54, 56, 57, 58, 59,
 60, 61, 62, 63
 Hildreth, C. L., Jr., 44
 Hill, A. G., 157, 162
 Hill, D. L., 88
 Hill, G. R., 281
 Hill, R., 364, 366, 369
 Hill, T. L., 8, 55, 288, 417,
 418, 419
 Hillenbrand, L. J., Jr., 266
 Hilliger, R. E., 154, 157
 Hinden, S. G., 301
 Hine, J., 256
 Hinselwood, C. N., 258, 350
 Hintenberger, H., 68, 76
 Hipple, J. A., 67
 Hirschfelder, J. O., 63, 183
 Hirschberg, Y., 141
 Hixon, R. M., 248
 Hoard, J. L., 223, 242, 248
 Hobbs, M. E., 226
 Roch, H., 409
 Hoch, M., 69
 Hochanadel, C. J., 143
 Hochberg, S., 419
 Hodgins, J. W., 352
 Hodgkin, D. C., 235, 242, 247,
 249
 Hoerni, J., 247
 Hofer, L. J. E., 300
 Hoffman, J. D., 230
 Hoffman, O. A., 415
 Hoge, H. J., 1, 3, 60
 Hogfeldt, E., 325
 Hohenstein, W. P., 313
 Hoijtink, G. J., 10
 Holden, A. N., 157, 158, 159,
 163, 164
 Hollaender, A., 115
 Holland, F. A., 4
 Holmes, B., 115
 Holmes, E. L., 311
 Holt, A. S., 364, 365, 366,
 368, 369, 370
 Holyroyd, L. V., 230
 Honig, R. E., 302
 Hooper, J. E., 95

Hopkins, H. H., 87
 Horn, A. B., 26
 Householder, A. S., 257
 Hovi, V., 7
 Howard, R. R., 157, 168, 169
 Howells, E. R., 244
 Howland, J. J., 87, 93
 Hsieh, Y. Y., 25
 Huang, K., 289
 Hubbard, W. N., 2, 9
 Hubbell, H. H., 409
 Huber, M., 75
 Hüchel, E., 40, 41, 136, 383
 Hudson, R. M., 44
 Huffman, E. H., 334
 Huffman, H. M., 2, 9, 13
 Huggill, A. G., 4
 Huggins, M. L., 52, 384, 385, 386
 Hughes, D. J., 240
 Hughes, E. A. M., see
 Moelwyn-Hughes, E. A.
 Hughes, E. D., 273, 274
 Hughes, R. H., 152, 153, 157, 158, 222
 Huizenga, J. R., 89
 Hultgren, R., 177
 Hume, D. N., 108
 Hume-Rothery, W., 210, 245, 246
 Hund, F., 24
 Hunt, E. B., 241
 Hunt, H. G., 280
 Hunter, M. J., 224, 317
 Hunter, T. G., 33
 Hurley, R. B., 277, 288
 Hutchison, C. A., 75
 Hutchison, K. E., 31
 Hüttig, G. F., 288, 297
 Hyde, E. K., 87
 Hyvönen, L., 7

I

Ingersoll, H. G., 1
 Ingersoll, J. G., 157
 Inghram, M. G., 68, 84
 Ingold, C. K., 142, 273, 274
 Inskeep, R. G., 227
 Ipatieff, V. N., 303
 Iredale, T., 357
 Irmann, F., 10
 Irsa, P., 299
 Ishihara, A., 52
 Iterson, W. van, 365, 369
 Itkina, L. S., 33
 Ito, T., 249
 Ivin, K. J., 9, 105, 355
 Iwasaki, M., 223

J

Jablonski, A., 141
 Jache, A. W., 30
 Jack, K. H., 300
 Jacobs, D. I. H., 273
 Jacobs, J., 139, 144

Jaffé, G., 102
 Jakobovits, J., 276
 James, A. T., 273
 James, D. G. L., 106, 113, 115
 James, J. C., 46
 Jarrett, S. G., 279, 280
 Jasper, J. J., 29
 Jastrow, R., 94
 Jauch, J. M., 162
 Jean, M., 139
 Jeffrey, G. A., 242, 244
 Jen, C. K., 152, 157, 158, 166, 167
 Jenkins, F. A., 2
 Jenkins, I. L., 46
 Jenkins, W. A., 25
 Jensen, H. J. D., 76
 Jerome, J. J., 354
 Jesse, W. P., 102
 Jessup, R. S., 10, 11
 Johnson, C. M., 153, 157, 158
 Johnson, M. F. L., 288
 Johnson, M. H., 235
 Johnson, P., 413
 Johnson, W. C., 61, 333
 Johnson, W. H., 10
 Johnston, H. L., 1, 2, 3, 9, 22, 23, 78, 145, 245
 Johnston, H. S., 256, 268
 Johnston, L., 94
 Johnston, W. M., 83
 Johnstone, H. F., 419
 Jolles, B., 114, 116
 Jollivet, L., 30, 32
 Jonassen, H. B., 11
 Jones, G. D., 265
 Jones, G. O., 4
 Jones, G. T., 273
 Jones, H., 191, 206, 207, 245
 Jones, J. E. L., see
 Lennard-Jones, J. E.
 Jones, L. H., 158, 160, 224, 225
 Jones, M. H., 273
 Jones, R. C., 74
 Jones, R. H., 272
 Jones, R. N., 132, 141
 Jones, W. M., 13
 Joyner, L., 289
 Juda, W., 318, 329
 Juday, C., 370, 373
 Jue, L. R., 31
 Juhola, A. J., 289
 Jungerman, J., 88
 Juza, R., 299

K

Kaesberg, P., 409
 Kahn, A., 352
 Kahut, F. W., 414
 Kamaliddin, A. R., 392, 396, 397
 Kandiner, J., 257
 Kane, G. P., 220

Kanig, G., 319
 Kantro, W. L., 350
 Kaplon, M. F., 95
 Kapustinskii, A. F., 10, 11
 Karle, I., 226
 Karle, I. L., 217, 218, 221
 Karle, J., 217, 218, 221, 243
 Karplus, R., 158, 162, 168, 169, 170
 Karraker, D. G., 87
 Karstens, W. K. H., 365, 369
 Karush, F., 411, 416
 Karzarnovskii, I. A., 11
 Kasha, M., 143, 144
 Kaskin, W. E., 145
 Kasper, J. S., 228, 242, 243, 247
 Katayama, M., 223
 Katchalsky, A., 321
 Katz, E., 379
 Katz, S. M., 289
 Katz, T., 24
 Kaufman, H. S., 226
 Kaufman, S., 413
 Kaummann, W., 410
 Kawenoki, F. B., see
 Boyer-Kawenoki, F.
 Kayas, G., 335
 Kaylor, H. M., 221
 Kazarnovskaya, L. I., 11
 Keefer, R. M., 58, 59, 249
 Kegeles, G., 408, 407
 Keier, N. P., 294
 Keilholz, G. W., 68, 166
 Keim, C. P., 77
 Kelley, K. K., 14
 Kelley, W. P., 309
 Kellogg, J. M. P., 159
 Kellogg, H. H., 14
 Kelly, E. L., 87, 94
 Kemball, C., 288
 Kendall, J. T., 75
 Kennedy, J. W., 45
 Kent, L., 258
 Kerr, E. C., 9
 Kessler, M., 153, 157, 158, 160, 224
 Ketelaar, J. A. A., 60, 137, 140, 250
 Kettle, B. H., 332, 334
 Keyes, G. H., 130, 131, 132
 Kharasch, M. S., 262, 350, 354
 Khun, W., 22
 Khym, J. X., 332, 333
 Kielland, J., 325
 Kiessling, R., 246
 Kilpatrick, J. E., 227
 Kilpatrick, J. L., 3
 Kilpatrick, M., 258, 271
 Kilpatrick, M. L., 266, 271
 Kimball, A. H., 70
 Kimball, G. E., 13, 140, 165, 180, 230
 Kinell, P. O., 408
 King, C. V., 26, 276
 King, D. T., 95

- King, E. G., 9
 King, W. H., 277
 Kingdon, K. H., 88
 Kingston, G. L., 8, 288
 Kinsey, B. B., 89
 Kirkwood, J. G., 48, 52, 53, 61, 409, 418, 419
 Kirshenbaum, I., 70
 Kisliuk, P., 151, 155, 157, 160, 166, 226
 Kistemacher, J., 8
 Kistiakowsky, G. B., 348, 356
 Kitchener, J. A., 311, 312, 323, 324, 325, 328, 329, 330
 Kitt, G. P., 77, 331
 Kittsley, S. L., 63
 Klein, J. A., 157
 Klemm, A., 74, 76
 Klemm, H., 33
 Kleppa, O. J., 7, 61
 Klerk, D. de, 4
 Klevens, H. B., 141, 145, 405, 415
 Klinger, W., 249
 Klochko-Zhovnir, Y. F., 24
 Klotz, I. M., 332, 411
 Knable, N., 93
 Knight, G., 160
 Knight, S. B., 7, 47, 276
 Knorr, H. V., 377
 Knox, J. G., 46
 Knudsen, E. S., 158, 159
 Koch, H., 300
 Koch, H. P., 142
 Kochnev, M. I., 11
 Koefoeld, J., 55
 Koehler, J. S., 230
 Koehler, W. F., 12
 Koenig, F. O., 418, 419
 Koenig, M. L. G., 365, 368
 Kofler, L., 22
 Kohler, F., 6
 Kohn, H., 143, 335, 377
 Kok, B., 368, 371
 Kolbel, H., 299
 Kolthoff, I. M., 108, 415
 Kolumban, A. D., 104
 Komoss, S. G. el, 136
 Konecny, C. C., 416
 König, W., 125
 Konopinski, E. J., 94
 Kopineck, H. J., 138
 Koppe, H., 8
 Korff, J., 417
 Korzenovsky, M., 371, 372
 Koski, V. M., 379
 Koski, W. S., 152, 153, 157, 164
 Kotera, A., 223, 224
 Kozak, R., 335
 Kraemer, E. O., 407
 Kraitichman, J., 155, 158, 160
 Kramer, F., 30
 Kranendonk, J. van, 2
 Krasnovsky, A. A., 376, 377
 Kratky, O., 409
 Kraus, C. A., 46
 Kraus, K. A., 334, 335
 Kravchenko, V. M., 32, 33
 Kressman, T. R. E., 311, 312, 323, 324, 325, 328, 329, 330
 Krieg, A., 300
 Krigbaum, W. R., 52, 394, 404
 Krinbill, C. A., Jr., 22, 60
 Krishnamoorthy, C., 325
 Krishnan, R. S., 141
 Kronig, R. de L., 162
 Kropa, E. L., 292, 301
 Krouskop, N. F., 22
 Krüger, H. E., 420
 Kruger, J., 58
 Kubaschewski, O., 25
 Kubitschek, H. E., 89
 Kuhn, D. W., 46
 Kuhn, H., 135, 136, 180, 185
 Kulka, P., 276
 Kumler, W. D., 145
 Kumm, T., 365, 369
 Kummer, J. T., 290, 294, 299, 300
 Kunin, R., 310, 315, 321, 324, 329, 336
 Kunzler, J. E., 4
 Kuratani, K., 226
 Kushner, L. M., 4, 131, 226, 230
 Kwart, H., 264, 353
 Kyhl, R. L., 153, 157, 159
- L
- Lacey, W. N., 26, 27, 28
 Lacher, J. R., 11
 Lafferty, R. H., Jr., 27
 Laidler, K. J., 255, 291
 Lamb, F. W., 48
 Lamb, W. E., Jr., 153, 157
 Lamberger, J., 31
 LaMer, V. K., 418, 419
 Lamont, H. R. L., 169
 Land, J. E., 7, 47
 Landau, H. G., 103
 Lander, J. J., 226
 Landler, Y., 105
 Landwehr, G., 414
 Lane, C. T., 3, 78
 Lang, K. L., see Lindström-Lang, K.
 Lange, E., 6
 Langer, L. M., 94, 95
 Langheim, R., 299
 Langseth, A., 225
 Langston, J. H., 263
 Lansing, W. D., 407
 Lapidus, L., 257
 Larisch, R. D., 6
 LaRochelle, J. H., 63
 Larson, Q. V., 320, 322, 325, 335
 Larason, L. E., 11
 Lassen, N. O., 102
 Latimer, W. M., 109
 Lattimore, S., 89
 Lauder, I., 74
 Lauffer, M. A., 407
 Laughton, P. M., 409
 Lawrance, R. B., 155, 158
 Lawrence, E. O., 93
 Lawrence, N. S., 365, 368
 Lawson, A. W., 245, 246
 Lea, D. E., 103, 108
 Lea, K. R., 11
 Le Bail, M., 108, 110, 113
 LeBlanc, R. B., 11
 LeBot, J., 151
 Le Clerk, G., 300
 Lee, G. L., 351, 352
 Leermakers, J. A., 345
 Leffler, J. E., 260, 262
 Lefort, M., 108, 109, 110, 113
 Leininger, P. M., 271
 Leith, C. E., 93, 94
 Leland, W. T., 68
 Lemaire, H. P., 222
 Lemberg, R., 374
 Lennard-Jones, J. E., 54, 63
 LeRoy, D. J., 268, 351, 352
 Lester, C. T., 280
 LeVan, W. I., 154, 159
 Lever, W. F., 414
 Levin, V. I., 291
 Levine, C. A., 84
 Levy, L., 336
 Lewis, C. M., 370, 375, 376
 Lewis, E. S., 280
 Lewis, G. N., 135, 141, 144, 269
 Lewis, P. L., 248
 Libby, W. F., 83, 84
 Licht, W., Jr., 32
 Lichtenstein, R. M., 73
 Lide, D. R., 158, 161, 165, 230
 Lilly, R. C., 334
 Limperos, G., 115
 Lind, E. L., 226
 Lindars, E. R., 297
 Lindgren, F. T., 408, 412
 Lindner, M., 86
 Lindsay, J. G., 73
 Lindström-Lang, K., 413
 Linnell, R. H., 355
 Linnett, J. W., 183
 Lipatov, S. M., 9
 Lister, B. A. J., 310, 324, 325
 Liu, C. H., 414
 Liu, T. K., 145
 Livingston, R., 144, 153, 158, 269
 Livingston, R. L., 222
 Llewellyn, F. J., 250
 Loebel, A., 276
 Lofgren, N. L., 10, 11
 Loiseleur, J., 108
 London, A., 138
 London, F., 3, 78

- Long, F. A., 275
 Longsworth, L. G., 406, 407, 408, 411
 Longuet-Higgins, H. C., 135, 136, 137, 139, 184, 247
 Lonsdale, K., 235
 Lontie, R., 405, 411
 Loomis, C. C., 158
 Lord, R. C., 221
 Loring, H. S., 336
 Lossing, F. P., 70
 Loubser, J. H. N., 153, 157, 158, 169
 Low, W., 152, 157, 162, 163, 164
 Löwdin, P. O., 136
 Lowe, D. S., 143
 Lowe, W., 126
 Lowen, W. K., 325
 Lu, C. S., 220
 Lucas, H. J., 249
 Lucas, P. R., see Ramart-Lucas, P.
 Lucas, V. E., 345, 346
 Lucht, C. M., 224, 228, 247
 Lühde-mann, R., 383
 Lukesh, J. S., 247
 Lumry, R., 368
 Lunbeck, R. J., 1, 3
 Lund, L. K., 222
 Lundgren, H. P., 413, 414
 Luthy, N., 336
 Lüttgens, E., 365, 366, 369, 370
 Luzzati, V., 250
 Lyddane, R. H., 138
 Lynch, C. C., 60, 281
 Lynch, M. A., 221
 Lyon, L., 292
 Lyons, H., 153, 157
 Lyons, L. E., 137
 Lyons, M. S., 44, 407
- M**
- Maass, O., 25
 McAfee, K. B., Jr., 152, 153, 157, 168
 McBain, J. W., 414, 415
 McBurney, L. F., 271
 McCabe, C. L., 275
 McCallum, K. J., 138, 142
 McCauley, D. J., 324
 McClaine, L. A., 10
 McClure, D. S., 142, 143, 144
 Maccoll, A., 135, 137, 140, 287
 McCord, R. V., 85
 McCormack, K. E., 1
 McCrea, J. M., 68, 69
 McCullough, J. D., 249
 McCullough, J. P., 2, 9
 McDonald, H. J., 28
 Macdowall, F. D. H., 369, 379
 McElcheran, D. E., 73
 McElhill, E. A., 277
- McFarlane, A. S., 412
 MacFarlane, R. B., 70
 MacGillivray, C. H., 243, 249, 250
 McGlashan, M. L., 7, 52
 McHan, H., 415
 McHenry, R. E., 27
 MacInnes, D. A., 408, 411
 McInteer, B. B., 3, 74, 78
 Mackay, M. H., 265
 McKetta, J. J., Jr., 26
 McKinney, C. D., Jr., 258
 McKinney, C. R., 68
 McLane, C. K., 266, 268
 MacLennan, D. F., 45
 McMillan, E. M., 86
 McMillan, W. G., 52, 62, 418
 McMillan, W. G., Jr., 29
 McNair-Scott, B. B., 336
 Macnamara, J., 70, 88
 McRae, W. A., 313
 Madison, T. C., 155, 157, 158, 159, 222, 223
 Mador, I. L., 275
 Madorsky, S. L., 76
 Madsen, E., 158, 159
 Magat, M., 103, 105, 386, 400
 Magee, J. L., 182, 370, 373
 Magneli, A., 249
 Magnusson, L. B., 89
 Malherbe, P. L., 292
 Mandelkern, L., 401
 Mann, D. E., 141, 156, 160
 Manneback, C., 162
 Manning, W. M., 370, 373, 374, 376, 378
 Margenau, H., 168, 169
 Marinsky, J. A., 325, 334
 Mark, H., 226, 313, 396, 397
 Markgraf, H. G., 6
 Markham, A. E., 29, 60
 Maron, S. H., 25, 276
 Marple, S., Jr., 1, 22
 Marquez, L., 89
 Märsh, G. A., 48
 Marshall, A. L., 2, 61
 Marshall, C. E., 309
 Marshall, H. S. B., 267
 Martell, A. E., 55
 Martell, E. A., 84
 Martens, R. D., 61
 Martin, A. P., 331
 Martin, G. R., 358
 Martin, H., 76
 Marvin, H. H., 408, 411
 Mason, G. W., 84
 Mason, L. S., 6
 Massini, P., 22
 Masson, C. R., 348, 397
 Mastrangelo, S. V. R., 2, 8, 9, 13
 Matheson, L. A., 332
 Matheson, M. S., 353
 Mathieson, A. M., 227
 Mathot, V., 5, 55, 60, 393
 Matlack, G., 155, 158, 160
- Matlack, M., 225
 Matsen, F. A., 137
 Mattauch, J., 68, 69
 Mattern, J., 158
 Matthews, J. B., 2
 Mattson, R. W., 415
 Mattson, S., 325
 Matyas, R., 212
 Maury, P. B., see Bonet-Maury, P.
 Maxted, E. B., 288, 295
 Maxwell, C. R., 246
 Maxwell, L. R., 221
 May, D. R., 292, 301
 Mayer, J. E., 29, 52, 62
 Mayer, M. G., see Goepfert-Mayer, M.
 Mayer, S. W., 325, 332
 Mayo, F. R., 255, 261, 265
 Mayot, M., 141
 Mays, J. M., 155, 157, 158, 160, 161, 165, 223, 225, 226
 Mead, D. J., 224
 Mebane, A., 276
 Mech, J. F., 84
 Meerson, S. L., 9
 Meijering, J. L., 63
 Meinke, W. W., 87, 89
 Meitner, L., 88
 Mellow, E. W., 74
 Melville, H. W., 264, 265, 268, 350, 353, 354, 397
 Melvin, E. H., 288
 Meng, C. Y., 157
 Meredith, W. J., 116, 117
 Merkel, H., 289, 300
 Merritt, F. R., 157, 158, 159, 163, 164, 170
 Mesrobian, R. B., 258, 261, 262
 Metz, D. J., 258
 Meyer, A. W., 61
 Meyer, K. H., 383
 Michel, A., 300
 Michels, A., 1
 Michels, C., 1
 Mignolet, J. C. P., 290
 Mikiewicz, E., 145
 Mikovsky, R. J., 6
 Mikus, F. F., 248
 Millar, R. W., 61
 Miller, A. R., 289, 385
 Miller, D. R., 87
 Miller, E., 30
 Miller, F. A., 227
 Miller, G. H., 300
 Miller, J., 279
 Miller, J. F., 81
 Miller, J. G., 276
 Miller, N., 101, 108
 Miller, R. R., 2
 Miller, S. L., 155, 158, 160
 Miller, W. K., 276
 Milliken, G., 301
 Millman, G. H., 157, 158, 159

- Mills, G. A., 301, 302
 Mills, J. M., 272
 Mills, R. L., 268
 Milner, H. W., 365, 368
 Minden, H., 152, 157, 158, 165
 Minkoff, G. J., 273
 Mitchell, A. C. G., 140
 Mitchell, H. V., 125
 Mitchell, J. S., 117
 Mitchell, J. W., 290
 Mitra, N. G., 26
 Mittelman, D., 414
 Mittelmann, R., 415
 Miyatake, O., 88
 Mizushima, M., 169
 Mizushima, S., 223
 Mochel, J. M., 30
 Moelwyn-Hughes, E. A., 2
 Moessen, G. W., 2, 9, 13
 Moffat, R. D., 94
 Moffitt, W. E., 123, 139, 181
 Mohler, F. L., 70
 Möller, C. K., 225
 Möller, E., 272
 Momotani, M., 12
 Monk, C. B., 46
 Montfort, C., 375
 Montroll, E. W., 8
 Moody, L. S., 412
 Mooi, J., 292
 Moon, K. L., 288
 Mooney, R. C. L., 249
 Moore, G. E., 2, 10, 22, 334, 335
 Moore, W. E., 370, 373
 Moore, W. J., 349
 Morgan, H. W., 68, 166
 Morgan, K. J., 274
 Mori, H., 249
 Morimoto, N., 249
 Morino, Y., 223
 Morris, M. S., 44, 407
 Morrison, J. A., 7, 8
 Morrison, P. R., 405, 411
 Morton, G. A., 241
 Morton, R. A., 114
 Mosher, W. A., 115
 Mosley, J. R., 9, 10
 Mott, N. F., 191, 245
 Motz, J., 94
 Mouton, R. F., 414
 Mower, L. M., 26, 57, 59
 Moyer, B. J., 93, 95
 Mrowca, B. A., 230
 Muan, A., 11
 Mulcahy, F. M. R., 258
 Müller, R., 141
 Mulligan, J. F., 184
 Mulliken, R. S., 59, 135, 136, 137, 138, 139, 142, 184, 248, 249
 Münster, A., 7, 53, 63, 387
 Muntz, J. A., 114, 116, 336
 Murphy, G. W., 279
 Music, J. F., 137
 Myers, F. J., 311
 Myers, L. S., Jr., 321, 325, 328, 329, 330, 332
 Myers, O. E., 101
 Myers, R. J., 310, 311, 315, 324, 329
- N
- Nachod, F. C., 329, 336
 Naiditch, S., 2, 22
 Nann, E., 76
 Narain, H., 226
 Naude, S. M., 221
 Nauman, R. V., 143
 Naylor, B. F., 10
 Néel, L., 239, 240
 Negelein, E., 370, 375
 Nekrassov, B. V., 247
 Nelson, P. A., 29, 60
 Nelson, R., 335
 Nernst, W., 40
 Neu, J. T., 227
 Neumann, H. M., 87, 93
 Neumark, G. F., 182
 Neurath, H., 412, 413, 414
 Newell, G., 152, 169
 Newing, M. J., 392, 393
 Newman, M. S., 274, 277
 Newton, A. S., 88
 Nichol, J. C., 47, 408
 Nichols, J. B., 408
 Nicholson, D. E., 47
 Nielsen, A. H., 221
 Nielsen, H. H., 156
 Nielsen, J. P., 24
 Nier, A. O., 3, 68, 70, 74, 77, 78
 Nijland, L. M., 249
 Nikitine, S., 136
 Nikol'skii, C. P., 11
 Nishimura, M. S., 371
 Nord, F. F., 296
 Nordheim, G. P., 142, 143
 Norrish, R. G. W., 351, 356, 357
 North, E. D., 75
 Norton, F. J., 2, 61
 Norton, L. E., 153, 157, 158
 Novoy, T. B., 95
 Nowacki, W., 244
 Nowotny, H., 30, 246, 247
 Noyes, H. P., 94
 Noyes, R. M., 2, 357
 Noyes, W. A., Jr., 2, 343, 347, 355
 Nuckolls, R. G., 157
 Nuttall, R. L., 44
 Nutting, G. C., 405
 Nylen, P., 271
 Nyrop, J. E., 295
 Nys, J., 133
 Nyström, J., 11
- O
- Obiad, A. G., 301, 302
 O'Brien, S. J., 26
 Ochoa, S., 366
 O'Connor, P. R., 87, 88
 O'Donnell, I. J., 321
 Ogg, R. A., Jr., 256, 268
 O'Gorman, J. M., 225
 Ogston, A. G., 406, 407, 410, 412
 Ohn, O., 9
 O'Konski, C. T., 419
 Olsen, L. O., 348
 Olson, A. R., 269
 Olson, G. G., 11
 Oncley, J. L., 412
 Ono, S., 63, 288
 Onsager, L., 37, 39, 41, 42, 75, 417
 Onyon, P. F., 267
 Oppenheimer, H., 415
 Oppenheimer, J. R., 95, 365, 377
 Orchin, M., 68
 Orlicek, A. F., 30
 Orr, W. C., 87
 Orr, W. J. C., 385, 388, 392, 393
 Osborn, E. F., 24
 Osborne, D. W., 3, 22, 78
 Osmun, R. H., 318
 Oster, G., 420
 Oswalt, R., 334
 Othmer, D. F., 30
 Otvos, J. W., 70, 71, 303
 Overbeek, J. T. G., 416
 Overage, E., 288
 Overstreet, R., 325
 Owen, B. B., 40, 41, 42, 45, 46, 48
 Owen, G. E., 94
 Owen, T. B., 223, 248
- P
- Page, F. M., 257
 Pais, A., 94
 Pake, G. E., 230
 Palmer, K. J., 225, 248
 Panofsky, W. K. H., 94, 95
 Pardee, A. B., 405, 416
 Paris, R. J., 31
 Park, J. D., 11
 Parks, G. S., 2, 9, 10, 22
 Parr, R. G., 138, 139, 143, 184
 Parravano, G., 265
 Partington, J. R., 1
 Partridge, S. M., 336
 Passaglia, E., 262
 Pasternak, V. Z., 277
 Patnode, H. W., 318
 Paul, K. G., 108
 Pauling, L., 11, 123, 132, 177, 180, 208, 211, 217, 218, 220, 224, 225, 229, 237, 241, 242, 245, 246, 247, 412, 416
 Pearce, E. J., 27
 Pearsall, C. S., 152, 158, 161

- Pearson, R. G., 272, 273
 Pease, R. N., 258, 259
 Pease, R. S., 247
 Pedder, J. S., 61
 Pedersen, K. O., 412
 Peebles, W. C., 300
 Pekerman, F. M., 144, 377
 Penneman, R. A., 108
 Penney, W. C., 162
 Penrose, R. P., 157, 168, 169
 Peppinsky, R., 242, 243
 Peppard, D. F., 84
 Pepper, K. W., 321, 324, 336
 Perkins, D. H., 89
 Perlman, I., 69, 86, 87, 88, 89, 90, 91, 93
 Perlman, M. L., 84, 85
 Perrin, M., 300
 Petering, H. G., 370, 373
 Peters, B., 95
 Peterson, J. M., 86
 Peterson, P. V., Jr., 9
 Petroustos, G., 295
 Petrov, A. A., 143
 Pfeil, P. C. L., 211, 212, 213
 Pfisterer, H., 246
 Phibbs, M. K., 344, 345, 350
 Phillips, D. C., 244
 Phillips, L., 267
 Philpot, J. S., 406
 Phipps, T. E., 2
 Pichler, H., 299, 300
 Pickett, L. W., 109, 133
 Pierce, C., 288, 289
 Pierce, N. C., 74
 Pietsenpol, W. J., 157, 158
 Pinching, G. D., 47, 48
 Pinnow, P., 221
 Pitt, G. J., 235, 242, 247, 249
 Pitts, A. C., 144
 Pitts, J. N., Jr., 356
 Pitzer, K. S., 11, 72, 227, 247
 Pivan, R. B., 411
 Plank, R., 23
 Platt, J. R., 135, 136, 137, 141, 145, 185
 Pleasonton, F., 85
 Plescia, O. J., 409
 Plummer, A. W., 14
 Podgurski, H., 299, 300
 Pohrt, H. E., 29
 Poll, A., 300
 Pollard, E. C., 114
 Pollard, F. H., 267
 Polley, M. H., 8, 288
 Pond, T. A., 157, 169
 Poole, H. G., 142
 Popják, G., 73
 Popper, F., 28, 60
 Porter, A. S., 289
 Porter, G., 356, 357
 Porter, K. R., 365, 369
 Porter, P. E., 333
 Pound, G. M., 418, 419
 Pound, R. V., 153
 Powell, C. F., 95
 Powell, H. M., 248
 Powell, J. E., 333, 334
 Powell, R. D., 365, 369
 Powell, R. E., 143
 Powell, W. M., 94
 Powers, P. O., 399
 Powling, J., 220, 227
 Pratt, E. F., 278
 Pressman, D., 416
 Preston, R. K., 278
 Prettre, M., 300
 Prévot, A., 99, 100
 Price, H. C., 94
 Price, W. C., 138, 145
 Prigogine, I., 5, 54, 55, 62
 Prikhotko, A. F., 143
 Primakoff, H., 94
 Pringle, R. W., 84, 101
 Pringsheim, P., 140, 366
 Pritchard, B. S., 157, 158, 160, 161, 222, 223, 226
 Pritchard, H. O., 12
 Probst, R. E., 3, 76
 Proctor, B. E., 100, 108, 116, 117
 Proctor, H. R., 326
 Proffitt, J. R., 280
 Prosen, E. J., 10
 Prutton, C. F., 32
 Puck, T. T., 25, 60
 Pullman, A., 137, 140
 Pullman, B., 141
 Purchase, M., 275
 Putnam, T. M., 91
 Pyle, G., 60
 Pyzhev, V., 292
- Q
- Quensel, I.-B. E., see Eriksson-Quensel, I.-B.
 Quevedo, J. L. de, 153
 Quill, L. L., 333
 Quinall, E. H., 5
- R
- Raal, F. A., 350, 354
 Rabi, I. I., 159
 Rabideau, G. S., 368
 Rabinovitch, B., 276
 Rabinowitch, E., 357, 364, 368, 369, 370, 376
 Rainwater, L. J., 235
 Raley, R. H., 260
 Rama Char, T. L., 108
 Raman, C. V., 4
 Ramart-Lucas, P., 145
 Ramaswamy, K. L., 220
 Ramsey, N. F., Jr., 159
 Rănby, B. G., 408
 Rand, M. J., 12, 257
 Randall, M., 269
 Rasmussen, J. O., 91
 Rasmussen, R. R., 28, 60
 Rastrup-Andersen, J., 158
 Raymond, R. C., 147, 158, 159
 Raynor, G. V., 209, 210, 211, 212, 213, 214, 245
 Read, J., 102, 114
 Reamer, H. H., 27, 28
 Rector, C. W., 137, 141
 Reed, R. I., 273
 Reese, R. M., 70
 Rehner, J., Jr., 400
 Reiber, H. G., 281
 Reichenberg, D., 313, 316, 324, 329
 Reid, C., 144, 224, 225
 Reid, T. J., 266
 Reinebeck, L., 144
 Renquist, M. L., 10
 Reynolds, A. E., 12
 Reynolds, C. A., 3, 78
 Reynolds, F. L., 91
 Reynolds, P. W., 295
 Rhodin, T. N., Jr., 288
 Rible, J. M., 325
 Rice, B., 226
 Rice, F. O., 287, 348
 Rice, O. K., 3, 23, 62, 344, 345, 346
 Richards, P. I., 157, 169
 Richardson, W. S., 166, 268
 Richman, C., 94
 Richter, E., 6
 Ridd, J. H., 274
 Rideal, E. K., 290
 Ridgway, S. L., 95
 Rieder, R. M., 27, 31
 Rieder, W., 101
 Rieger, M., 279
 Rieke, C. A., 136
 Rieke, F. F., 370
 Rieman, W., 3rd, 333, 335
 Rienacker, G., 295
 Ries, H. E., Jr., 288
 Rifkin, E. B., 9
 Riley, D. P., 409
 Riley, N. A., 245
 Ring, H., 157, 158, 159, 160, 224, 226
 Risse, O., 108
 Ritchie, A. W., 290, 293
 Ritchie, P. F., 271
 Ritland, H. N., 409
 Robb, J. C., 268, 350
 Roberts, A., 153, 155, 157, 158, 160, 164, 218, 221, 225
 Roberts, D. E., 9
 Roberts, E., 273
 Roberts, J. D., 274, 275, 277
 Roberts, J. S., 261, 266, 267
 Roberts, T. R., 68
 Robertson, A. J. B., 302
 Robertson, C. V., 25
 Robertson, J. M., 227, 244

- Robertson, W. W., 137
 Robin, S., 145
 Robson, J. M., 85
 Rock, S. M., 68
 Roe, A., 276
 Roess, L. C., 409
 Rogan, R. M., 11
 Rogers, D., 244
 Rogers, J. D., 157, 158
 Rogers, M. T., 221
 Roginskii, S. Z., 291, 294, 295, 297
 Rollefson, G. K., 345
 Rollin, B. V., 5
 Rooksby, H. P., 238
 Roothaan, C. C. J., 137, 138, 139, 142, 184
 Rosen, J. B., 332
 Rosenberg, N. W., 356
 Roseveare, W. E., 407
 Rösler, U., 246
 Ross, I. G., 138, 139, 143, 184
 Ross, W. C. J., 116
 Rossi, B. B., 95
 Rossi, G. B., 91
 Rossini, F. D., 10, 22
 Roth, E., 67
 Roth, W., 224
 Rothmund, P., 377
 Rothery, W. H., see Hume-Rothery, W.
 Rothstein, A. A., 277
 Roulston, K. I., 84
 Roy, D. M., 24
 Roy, R., 24
 Rubin, W., 280
 Ruderman, I. W., 235, 236, 241
 Rudoff, H., 263
 Rueger, L. J., 157
 Rundle, R. E., 241, 246, 247, 248
 Rush, J. H., 143
 Rushbrooke, G. S., 53, 383
 Rusinow, K., 157, 220
 Russell, P. B., 277
 Russell, W. W., 300
 Rust, F. F., 258, 260, 355
 Rutenberg, A. C., 358
 Rutherford, R. C., 157
 Rykian, L. R., 108
 Rylander, P. N., 275
- S
- Sackmann, H., 2
 Sadauskis, J., 102
 Sage, B. H., 26, 27, 28
 Sage, M., 350
 Sakashita, K., 226
 Saksena, B. D., 226
 Saldick, J., 257
 Salmon, O. N., 248
 Samoilov, O. Y., 10
 Samson, S., 246
 Samuelson, O., 322, 325, 326
 Sanger, F., 413
 Sarolea, L., 62
 Sauer, R. O., 224
 Sauerwold, C., 2
 Saunders, A. W., 292, 301
 Savage, H. W., 77
 Sawyer, W. M., 419
 Sayre, E. V., 4, 33
 Scarisbrick, R., 364, 366, 369
 Scatchard, G., 30, 404, 411, 412
 Schachman, H. K., 407
 Schadel, H. M., Jr., 2
 Schaefer, V. J., 418
 Schaeffer, G. W., 141
 Schaeffer, O. A., 70
 Schaeffer, W. D., 288
 Schafer, W., 27
 Scharff-Goldhaber, G., 95
 Scheibe, G., 141
 Scheinberg, I. H., 411
 Scheld, H., 68
 Schick, M. J., 9, 397
 Schissler, D., 299
 Schmerling, L., 303
 Schmid, K., 414
 Schmidt, C. L. A., 108
 Schmidt, O., 295
 Schneider, C. H., 288
 Schneider, W. G., 1, 29, 62
 Schneiderman, H., 116
 Schnerb, J., 26
 Schocken, V., 371, 372, 373
 Schoenberg, M. D., 116
 Scholes, G., 115, 116
 Scholz, S., 75
 Schomaker, V., 217, 218, 220, 221, 224, 225, 242, 244, 249
 Schroyer, F. K., 292
 Schubert, J., 310, 323, 324, 325, 333
 Schubert, K., 246
 Schuch, A. F., 246
 Schuchowitzky, A. A., 61
 Schuette, O. F., Jr., 74
 Schuler, F. W., 279
 Schüler, H., 144
 Schultz, R. D., 348
 Schulz, G. V., 390, 391
 Schulzeff, A., 74
 Schumacher, H. J., 256
 Schumb, W. C., 221
 Schwab, G. M., 281, 295
 Schwert, G. W., 413, 414
 Schwinger, J., 168, 169
 Scott, B. B. M., see McNair-Scott, B. B.
 Scott, D. W., 2, 9, 13
 Scott, M. R., 69
 Scott, R. L., 5, 11, 51, 54, 59, 62, 386, 399, 400
 Seaborg, G. T., 69, 84, 85, 87, 88, 89, 90, 91, 92, 334
 Searles, S., 274
 Sears, G. W., 2
 Secoy, C. H., 25
 Seel, F., 134, 140
 Seelmann-Eggebert, W., 68, 76
 Segrè, E., 94
 Sehon, A. H., 266
 Seibert, F. B., 408
 Selfert, R. L., 2
 Seitz, F., 191, 198, 200
 Seki, S., 12
 Selberg, H., 11
 Seligman, B., 300
 Selwood, P. W., 259, 280, 292
 Senatore, S. J., 157, 161
 Serber, R., 86
 Servais, P. C., 224
 Seshan, P. K., 141
 Seubold, F. H., Jr., 260
 Sewell, D. C., 86
 Seyer, W. F., 21, 60
 Shaffer, P. A., Jr., 218, 242
 Shand, W., Jr., 225
 Sharbaugh, A. H., 152, 155, 157, 158, 159, 160, 161, 162, 222, 223, 226
 Sharma, J. N., 61
 Sharp, D. G., 409
 Shauli, J. M., 153
 Shaw, P. F. D., 101
 Shedlovsky, T., 7, 47
 Sheehan, J. C., 336
 Sheffer, F. E. C., 61
 Sheline, R. K., 227
 Shepherd, M., 67
 Sheppard, C. W., 99, 257
 Sheppard, M. G., 12
 Sheridan, J., 157, 158, 159, 160, 220, 222, 223
 Shiau, Y. G., 370
 Shields, R. B., 67
 Shine, H. J., 278
 Shockley, W. H., 277
 Shoemaker, D. P., 244, 246, 249
 Shoolery, J. N., 158, 160, 224
 Shooter, E. M., 413
 Shortley, G., 140
 Shull, C. G., 235, 236, 237, 238, 239, 240, 241, 409
 Shull, H., 142
 Shulman, R. G., 154, 157, 158, 159, 160, 161, 162, 165, 220, 224
 Shultz, A. R., 398, 399, 400
 Shultz, J. F., 300
 Sieg, L., 29
 Siegbahn, K., 77
 Siegel, S., 237, 241, 276
 Sillen, L. G., 249, 325, 332
 Silvidi, A. A., 5
 Simanouti, T., 223
 Simmons, J. W., 153, 155, 157, 158, 160, 225
 Simmons, L. M., 2
 Simon, F. E., 3, 4

AUTHOR INDEX

437

- Simons, E. L., 28
 Simons, J. H., 5, 56, 278, 303
 Simonson, T. R., 269
 Simpson, O. C., 2, 89
 Simpson, W. T., 135, 136, 137, 138, 140
 Sinclair, D., 419
 Sinclair, V. C., 227
 Singer, K., 255
 Singer, L., 73
 Singer, T. P., 114, 116
 Sinha, P. C., 26
 Sips, R., 288, 417
 Sitte, H., 22
 Sivertz, M., 152
 Skidmore, J. R., 318
 Skinner, H. A., 6, 12, 59
 Skinner, M., 157
 Sklar, A. L., 123, 130, 135, 137, 138, 142
 Skogseid, A., 317
 Skrabal, A., 255
 Slater, J. C., 137, 177, 183, 185
 Slater, R. B. A., see Alfin-Slater, R. B.
 Sleight, N. R., 332, 333
 Sloan, R., 158
 Slowinski, E. J., 221
 Small, G., Jr., 280
 Smart, J. S., 237, 238
 Smisko, J., 6
 Smith, A. E., 248, 293
 Smith, A. G., 153, 155, 157, 158, 159, 160, 225
 Smith, C., 104
 Smith, D. F., 157, 160, 161, 169, 221
 Smith, E. C., 370, 373
 Smith, F. W., 145
 Smith, H. A., 277, 288
 Smith, H. G., see Grayson-Smith, H.
 Smith, J. C., 30, 32
 Smith, J. H., 268
 Smith, J. H. C., 374
 Smith, J. O., 265
 Smith, K. A., 116
 Smith, L. A., 130
 Smith, L. S. A., 258
 Smith, L. W., 419
 Smith, M. E., 358
 Smith, P., 106
 Smith, R. F., 365, 366, 368, 408, 411
 Smith, R. N., 288, 289
 Smith, R. W., 288
 Smith, S. H., Jr., 2
 Smith, W. R., 8, 288
 Smith, W. V., 68, 152, 153, 157, 158, 159, 160, 163, 166, 168, 169, 222
 Smits, P., 1
 Smoluchowski, R., 201, 214
 Smyth, C. P., 4, 131, 226, 230
 Smyth, H. D., 74, 75
 Snell, A. H., 85
 Snoke, J. E., 413
 Snow, A. I., 246, 247
 Snyder, H. S., 157, 169
 Socquet, I. M., 291
 Soffer, L. M., 263
 Soldano, B. A., 317, 318, 330
 Solomon, E., 70
 Sommerfeld, A., 187
 Sonenberg, M., 411
 Southern, A. L., 68, 166
 Sparrow, D. E., 263
 Spedding, F. H., 332, 333, 334
 Speiser, R., 2, 22, 23, 245
 Spencer, R. S., 400
 Spencer, W. B., 299
 Spengler, H., 300
 Spicer, W. M., 58
 Spikes, J. D., 368
 Spindel, W., 77
 Spinks, J. W. T., 99
 Spinrad, B. I., 46
 Spitzer, R., 227
 Spomer, H., 140, 142, 143
 Spotz, E. L., 2
 Sprague, R. H., 126, 128, 129, 130, 131, 132, 133
 Sprenger, G., 256
 Springall, H. D., 225
 Spurr, R., 224
 Sreeramamurthy, K., 143
 Stackelberg, M. von, 241, 248
 Stage, H., 27
 Stallcup, M. J., 143
 Standil, S., 84
 Stannett, V., 261, 262
 Starke, K., 76
 Staton, H. A., 7, 47
 Stauffer, J. F., 370, 373
 Staverman, A. J., 53, 387
 Steacie, E. W. R., 255, 268, 343, 344, 345, 346, 348
 Stead, B., 257
 Stearns, R. S., 415
 Stecker, G., 300
 Steenlund, M. J., 4
 Steffen, R. M., 95
 Stein, G., 100, 111, 115
 Steinberger, J., 95
 Steingiser, S., 28, 61
 Steinhauser, H. H., 32
 Steinmetz, H., 2
 Steller, J., 95
 Stent, G. S., 30, 55
 Stephens, E. R., 258
 Stephens, W. E., 102
 Stern, A., 275, 374
 Stevens, H. C., 263
 Stevens, W. H., 73
 Stevenson, D. P., 70, 71, 217, 220, 226, 303
 Stevenson, D. T., 95
 Stewart, D. W., 67, 73, 75
 Stitt, F., 223
 Stockmayer, W. H., 1, 263, 400, 420
 Stoenner, R. W., 325
 Stokes, R. H., 45
 Stone, F. S., 303
 Storch, H. H., 300
 Stout, J. W., 3
 Stover, B. J., 93
 Strain, F., 263
 Strain, H. H., 374
 Strait, L. A., 145
 Strandberg, M. W. P., 152, 153, 154, 157, 158, 159, 161, 162
 Straus, S., 76
 Strauser, W. A., 236, 237, 238, 239, 240
 Street, K., Jr., 92, 334
 Strickland, J. D. H., 325
 Stricks, W., 415
 Strong, L. E., 46
 Studier, M. H., 84
 Sturdivant, J. H., 246, 247, 248
 Suchanek, L., 134
 Suess, H. E., 70, 75
 Sugarman, N., 88
 Suhr, A., 76
 Sullivan, J. C., 84
 Sullivan, W. H., 69
 Sumner, J. F., 2
 Sundberg, L., 249
 Sundheim, B. R., 320
 Sunyar, A. W., 95
 Suratt, E. C., 280
 Surgenor, D. M., 414
 Sussman, S., 336
 Sutton, H. C., 358
 Sutton, L. E., 220
 Svartholm, N., 77
 Svensson, H., 408, 409
 Sveshnikov, B. Y., 142, 143
 Svirbely, W. J., 226, 275
 Swain, C. G., 258, 263, 271, 272, 278, 353
 Swan, W. O., 155, 158, 160, 225
 Swanson, D. M., 406
 Swenson, C. A., 3
 Swern, D., 60
 Swingle, S. M., 416
 Swislocki, M., 68
 Sydorak, S. G., 3
 Syngge, J., 331
 Syrkin, J. K., 247
 Szasz, G. J., 7
 Szwarc, M., 255, 261, 265, 266, 267, 344
 Taconis, K. W., 3
 Taft, R. W., Jr., 277
 Taifer, M., 317
 Takeda, S., 226
 Takeuchi, Y., 249
 Talley, R. M., 221
 Tamburino, S., 89
 Tamele, M. W., 301

- Tanada, T., 376
 Tanaka, Y., 32
 Tanford, G., 411
 Tang, T. Y., 245, 246
 Taplin, G. V., 100
 Tarbell, D. S., 275
 Taube, H., 358
 Taylor, A. R., 409
 Taylor, B., 115
 Taylor, G. R., 184
 Taylor, H. A., 259, 348
 Taylor, H. S., 265, 266, 287, 288, 295, 417
 Taylor, R. C., 63
 Taylor, T. B., 86
 Taylor, T. L., 77
 Taylor, T. L., 235
 Teegan, J. P., 138, 145
 Teis, R. V., 69
 Teller, E., 95, 140, 142, 288, 295, 296, 416, 417, 418
 Temkin, M., 292
 Templeton, C. C., 31
 Templeton, D. H., 87, 91, 246, 249
 Tentschert, H., 299
 Tevebaugh, A. D., 334
 Thew, K., 69
 Thewlis, J., 235
 Thiele, E. W., 292, 332
 Thoday, J. M., 114
 Thode, H. G., 67, 69, 70, 73, 88
 Thodos, G., 23
 Thomas, C. L., 300
 Thomas, H. C., 275, 331
 Thomas, J. V., 44, 407
 Thomas, V. G., 157, 160, 161, 223, 226
 Thompson, A. R., 27, 31
 Thompson, F. W., 4
 Thompson, H. S., 309
 Thompson, J. O., 406
 Thompson, J. W., 220
 Thompson, R., 334
 Thompson, R. C., 87
 Thompson, S. G., 91, 92, 334
 Thornton, R. L., 93
 Thornton, V., 69
 Thulin, S., 77
 Thung, T. H., 365, 369
 Tidwell, M., 157, 160, 161, 221
 Tiniot, J. H., 95
 Tiselius, A., 332, 413
 Tisza, L., 2, 62
 Titzenthaler, E., 300
 Tober, F. W., 45
 Tobias, P. E., 28, 61
 Tobolsky, A. V., 258
 Todd, S. S., 9
 Todes, O., 294
 Tolbert, B. M., 126, 262
 Tolmach, L. J., 366
 Tolman, T. C., 418, 419
 Tombs, N. C., 238
 Tompa, H., 55, 399, 400
 Tompkins, E. R., 310, 332, 333, 334, 335
 Tompkins, F. C., 8, 288, 289
 Tompkins, P. C., 99
 Tonnelat, J., 373
 Topp, N. E., 321
 Torkington, P., 14
 Townes, C. H., 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 166, 170, 180, 220, 223, 225, 226
 Trambarulo, R., 158, 159, 160, 222, 224, 225
 Trambouze, Y., 300
 Trapnell, B. M. W., 290
 Trautz, O. R., 200, 201
 Triwush, H., 411
 Trofimov, A. V., 70
 Trombe, F., 246
 Trost, W. R., 346
 Trotman-Dickenson, A. F., 268, 343, 344, 345
 Tschamler, H., 6, 12
 Tudge, A. P., 70
 Tung, L. H., 74
 Turkevich, J., 70, 158, 299, 409
 Turovskii, G. Y., 302
 Twigg, G. F., 298, 299

 U
 Ubbelohde, A. R., 4, 289, 299
 Uberreiter, K., 319
 Ueda, Y., 224
 Uhlenbeck, G. E., 95
 Umbreit, W. W., 370
 Unterberger, R. R., 153, 158, 160, 222
 Urey, H. C., 68, 69, 70, 71, 73, 75, 76, 77
 Uri, N., 358
 Uroma, E., 414
 Urquhart, J. D., 311
 Urquhart, J. M., 411
 Urry, W. H., 354

 V
 Vainshtein, F. M., 302
 Valentine, L., 264, 353
 Vandenbelt, J. M., 141, 145
 van der Veen, R., see Veen, R. van der
 van der Waals, J. H., see Waals, J. H. van der
 van der Ziel, A., see Ziel, A. van der
 Van Dormael, A., 133
 Van Dranen, J., 137, 140
 Van Dyke, R. H., 131, 132
 van Irterson, W., see Irterson, W. van
 van Kranendonk, J., see Kranendonk, J. van
 Van Lare, E., 130, 131, 132
 Van Norman, R. M., 379
 Van Royen, A., 312, 313
 van Velden, P. F., see Velden, P. F. van
 Velden, P. F. van
 Van Vleck, J. H., 157, 159, 162, 168, 169, 180, 237
 van Voorhis, S. W., see Voorhis, S. W. van
 Van Winkle, M., 29, 60
 Van Zandt, G., 130, 131, 132, 133
 Vaughan, W. E., 258, 260, 355
 Vavilov, S. E., 144, 377
 Veen, R. van der, 368, 371
 Velden, P. F. van, 60
 Velick, S. F., 411
 Vener, R. E., 31
 Verhoek, F. H., 277
 Verlegen, H., 221
 Vermuelen, T., 332
 Vernon, A. A., 63
 Vernon, C. A., 273
 Verwey, E. J. W., 416, 417
 Viallard, R., 103
 Vierk, A. L., 61
 Vishniak, W., 366
 Vodar, B., 145
 Voge, H. H., 301
 Vogell, W., 75
 Voight, A. F., 332, 333
 Vojnovskaja, K. K., 376, 377
 Vold, R. D., 416
 Volkenstein, F. F., 295
 Volmer, M., 418
 Vonnegut, B., 419
 von Stackelberg, M., see Stackelberg, M. von
 Voorhis, S. W. van, 14
 Vries, J. L. de, 249

 W
 Waals, J. H. van der, 55, 387, 393
 Wächter, H., 6
 Waddington, G., 2, 9
 Wagner, C., 7, 61, 62, 292, 303
 Wagner, C. D., 70, 71, 303
 Wahrhaftig, A. L., 221
 Waing, G. M., 271
 Wakefield, Z. T., 9
 Wakeman, D. W., 209, 210
 Walcher, W., 69
 Walden, C. H., 11
 Waldmann, L., 74
 Waldo, P. G., 302
 Waldron, M. B., 211, 213, 214, 245
 Waldron, R. D., 225
 Wales, M., 406
 Walker, F. M., 411
 Walker, W. H., 89
 Wall, F. T., 30, 55
 Wall, L. A., 267, 349
 Wallace, W. E., 63
 Walling, C., 255, 265

- Walsh, A. D., 135, 138, 145, 181
 Walsh, T. J., 32
 Walter, G. F., 133
 Walter, J., 140
 Walter, J. E., 157, 158, 159, 331
 Walton, H. F., 325, 335
 Wang, J. H., 45
 Wannier, G. H., 154, 157
 Warburg, O., 365, 366, 369, 370, 371, 372, 373, 375
 Ward, W. H., 414
 Warhurst, E., 13
 Warner, J. C., 275
 Wasastjerna, J. A., 7
 Washburn, H. W., 67
 Wassenaar, T., 1
 Wassermann, A., 280
 Wassink, E. C., 379
 Watanabe, T., 249
 Watanabe, W., 274
 Watson, H. E., 220
 Watson, W. F., 144
 Watson, W. W., 74, 75
 Watt, G. W., 25
 Watts, R. J., 153, 157
 Waxman, M., 320
 Way, J. T., 309
 Way, K., 69
 Wayne, L. G., 258
 Weatherford, W. D., Jr., 77
 Weaver, B., 77, 91
 Webb, R. L., 277
 Weber, W., 25
 Wechsler, M. T., 11
 Wegmuller, F., 115
 Wegscheider, R., 255
 Weiblein, D. G., 222
 Weidner, R. T., 157
 Weigl, J. W., 73, 363
 Weigle, J., 247
 Weil, H., 77
 Weingarten, I. R., 153, 157, 169
 Weinman, E. A., 30
 Weinstock, B., 3, 22, 78
 Weiser, H. B., 416
 Weiss, J., 112, 115, 116, 295, 331, 376
 Weiss, M. T., 152, 158, 161
 Weissburger, A. S., 116
 Weissner, H. R., 69
 Weisskopf, V. F., 168
 Weissman, S. L., 142, 144
 Weitkamp, A. W., 300
 Weller, E. H., 224
 Weller, S., 300, 369
 Wells, E. J., Jr., 70
 Wender, L., 68
 Wentink, T., Jr., 152, 153, 154, 157, 162, 164
 Wentorf, R. H., Jr., 63
 Werble, E., 278
 West, J. R., 14
 Westall, R. G., 336
 Westenber, A. A., 158, 159, 160, 161, 225
 Westheimer, F. H., 279
 Westrum, E. F., Jr., 10
 Wettig, F., 6
 Wever, F., 202
 Weyl, W. S., 297
 Whalley, E., 74, 302
 Whatley, F. R., 365, 366, 369
 Wheaton, R. M., 315, 324
 Wheeler, A., 292, 293, 294
 Wheland, G. W., 135, 184, 225
 Whiffen, D. H., 151
 Whitaker, M. D., 235
 White, D., 1, 22
 White, F. L., 126, 128, 129, 130, 131, 132, 133
 White, J. G., 227, 244
 White, L., Jr., 288
 White, R. R., 32
 Whitehouse, W. J., 88
 Whiteway, S. G., 45
 Whittingham, C. P., 371
 Whittle, E., 13
 Whynes, A. L., 1
 Wick, G. C., 167
 Wiegand, C., 87, 94
 Wiener, L. D., 32
 Wigner, E., 140, 200
 Witig, E. W., 289
 Wijker, H(k), 1
 Wijker, H(ub), 1
 Wiklander, L., 325
 Wilhelm, R. H., 292
 Wilkinson, G., 93
 Wilkinson, P. G., 145
 Williams, D., 153, 157, 158
 Williams, D. V. P., 157, 160, 161, 221
 Williams, F. C., 21
 Williams, G., 255
 Williams, H. L., 264
 Williams, J. P., 7
 Williams, J. Q., 157, 158, 159, 226
 Williams, J. W., 406, 408, 410, 413, 414
 Williams, N. H., 157
 Williams, N. T., 104
 Williams, R. R., Jr., 358
 Williams, W. W., 130
 Williamson, A. T., 348
 Williamson, K. D., 2, 9
 Willis, J. H., 31
 Wilson, A. J. C., 244, 249
 Wilson, A. S., 246
 Wilson, E. B., Jr., 152, 153, 154, 155, 157, 158, 159, 160, 161, 162, 166, 225
 Wilson, G. L., 272
 Wilson, J. A., 326
 Wilson, J. H., 225
 Wilson, J. N., 331
 Wilson, M. K., 227, 268
 Wilson, R., 89
 Wilson, T. P., 222
 Winogron, F., 26
 Winsche, W. E., 332, 419
 Winslow, G. H., 89
 Winstein, S., 249, 280
 Winter, E. R. S., 74, 302
 Winters, J. C., 336
 Wirth, H. E., 6, 48
 Wise, H., 25, 60
 Wiseman, L. A., 270
 Wish, L., 99
 Witnauer, L. P., 60
 Wittenberger, W., 32
 Wohl, K., 377
 Wojciechowski, M., 57
 Wolf, M., 370, 373
 Wolfgang, R. L., 83
 Wolgast, K., 257
 Wolkers, G. J., 1
 Wollan, E. O., 235, 236, 237, 238, 239, 240, 241
 Wollman, J., 143
 Wood, S. E., 30
 Wood, W., 329
 Wood, W. C., 357
 Wright, B. D., 157, 164
 Wright, J. M., 333
 Wright, N., 224
 Wright, S., 89
 Wright, S. C., 88
 Wrightson, F. M., 70
 Wu, C. S., 94, 95
 Wyatt, R. M. H., 267
 Wyllie, G., 289
 Wyllie, M. R. J., 318
 Wynkoop, R., 292
 Wyrnyn, R. E., 368
- Y
- Yamasaki, K., 223, 224
 Yang, L., 290
 Yankwich, P. E., 71
 Yasaki, T., 88
 Yip, S., 60
 Yokoi, M., 223, 224
 York, H., 94
 York, H. F., 95
 Yost, D. M., 158, 160, 223, 224, 256, 258, 358
 Young, C. W., 224, 226
 Young, H. H., Jr., 257
 Young, T. F., 410
 Ypsilantis, T. J., 90
 Yuster, P., 144
 Yutema, J. L., 1
- Z
- Zaccharias, J. R., 159
 Zachariasen, W. H., 246, 250, 319
 Zalkin, A., 246
 Zawadzki, J., 303
 Zbarsky, S. H., 73
 Zeldes, H., 45
 Zelikoff, M., 259

Zemansky, M. W., 140
Zener, C., 197
Zhovnir, Y. F. K., see
Klochko-Zhovnir, Y. F.

Ziel, A. van der, 153
Zimm, B. H., 9, 29, 52, 62,
397, 420
Zimmerli, A., 28

Zimmerman, J., 357
Zucker, A., 74, 75
Zwietering, T., 1
Zwolsinski, B. J., 291

SUBJECT INDEX

A

Absorption, light

activation energy and, 134
aromatic stabilization and, 128

and basicity, on color
deepening, 126

conjugated chain length and, 124-25

excitation energy and, 134
extreme and intermediate
structures, energy difference between, 126-29

of organic compounds,
qualitative interpretation of, 121-34

resonance theory and, 121-22
steric hindrance on, 132-34

of three ring systems,
planarity and, 133, 34
of unsymmetrical dyes, 129-30

energy levels of, 129-30
sensitivity and, 130
wave length maximum and, 129

valence bond method of, 121

see also Spectroscopy

Acetaldehyde

acetone-vinyl acetate-

water system, graphic

representation of, 33

ethylene oxide system, 28
and hydration, catalysis of, 272

photodecomposition of, 346-47

methyl radicals on, 354
vapor, photodecomposition of, 344-46

Acetates, hydrolysis of, activation energies of, 33

Acetic acid, calcium chloride-water system, volatility and, 31

Acetic anhydride, pyridine system, 29

Acetone

acetaldehyde-vinyl acetate-water system, graphic representation of, 33
alkaline bromination of, 257

cellulose acetate-chloroform system, phase diagram of, 399

chloroform system, heat of mixing of, 53

enolization of, in aqueous solution, 271, 272

halide hydrolysis and, 12
hydrogenation, catalysis and, 299

iodine complex of, 59

photodecomposition of ketene and, 348

methyl radical source and, 343-44

solid, fluorescence lifetime of, 145

Acetylene, hydrogenation, catalysis and, 298-99

N-Acetylglycine, molecular configuration of, 228

Acetyl peroxide, thermal decomposition of, in carbon tetrachloride, 261-62

Acrylonitrile

aqueous, polymerization of, 106

radiopolymerization of, reaction rate and, 105

x-ray actinometry and, 99-100

Actinides, chromatographic separation of, 334

Acyl aldoximes, alkaline hydrolysis of, mechanisms of, 279

Adsorption

Brunauer-Emmett-Teller multilayer theory of, 288

colloids and, 417-18

catalysis and, 287-91

chemical, 289-91

adsorbent electronic structure and, 289

contact potential and, 290-91

heat of, 289

theory of, 289

conductivity and, 290

on electronic structure, 289

of gases

energy of, 288

entropy of, 288

on heterogeneous surfaces, 288

heat of, surface covered on, 293-94

heat capacity and, 7-8

Hüttig multilayer theory of, 288

isotopes and, 294

on metals, electronic behavior and, 289-90

physical, 287-89

contact potential and, 290-91

pore measurements and, 288-89

of polar-dipole solutions, 62

polarization on, 297

of protons, on metals, 296

statistical mechanics and, 8

thermodynamics of, 7-8

see also Catalysis; and Surfaces

α -Alanine, molal compressibilities of, 48

β -Alanine, molal compressibilities of, 48

D,L-Alanine, molecular configuration of, 228

Alcohols

heats of dilution of, 6

irradiation of, 105

sulfation of, catalysis and, 274

Aldehydes, in paraffinic solvents, photodecomposition of, 351

Alkali metals, polymorphism of, 200

Alkaline earth perchlorates, freezing points of, 47

Alkenes, polymerization of, mechanisms of, 303

Alkylammonium salts, conductance of, 46

Alkyl nitrates, pyrolysis of, 287

Alkyls, metallic, thermochemistry of, 12

Alloys

aluminum, 210-11

γ -brass, 208

catalysis by, 295-96

liquid, activity determination of, 61

magnetization of, theory of, 214-16

polymorphism and, 200-4

solid, 23-24

band theory and, 206

solubility limits and, 204-8

structure of, 204-8

electron concentration on, 204-5

temperature on, 207-8

x-ray crystallographic determination of, 245-47

- transition elements and, 211-14
band theory and, 211
see also Metals
- Allyl bromide, pyrolysis of, 266, 267
- Alpha-ray, on carboxypeptidase, 117
- Aluminum
alloys of, 210-11
electron concentration of, 212
transition elements and, 211
- cobalt alloy
Brillouin zone of, 213-14
monoclinic, structure of, 245
monoclinic, valence and, 245-46
- cobalt-iron-nickel alloy, electron concentration of, 212
- silver alloy
electron concentration on, 210
phase diagram of, 209
and transition elements, vacant orbitals and, 211-12
- zinc alloy
electron concentration on, 210
phase diagram of, 209
- Aluminum borohydride
1-butene oxidation and, 259
olefin reaction with, kinetics of, 259
- Aluminum chloride, heats of mixing of, 12
- Aluminum nitrate, n-hexanol-water system, water activity in, 31
- Aluminum oxide
calcium oxide-ferric oxide-silica-sodium oxide system, phases of, 33
catalysis by, oxidation and, 302
catalytic cracking and, 301
- Americium, chromatographic separation of, 334
- Amides, formaldehyde reactions with, 281
- Amines, ester reactions with, kinetics of, 277
- Amino acids
chromatographic separation of, 336
in proteins, molecular configurations of, 228
 α -Amino acids, acid anhydride reactions with, catalysis of, 274
- Amino radical, and hydrocarbon oxidation, kinetics of, 258
- Ammonia
bond angles in, 180
decomposition of, iron catalysis of, 291-92
liquid, alkali metal solubility in, 61
molecular structure of, 156
oxidation of
noncatalytic, kinetics of, 258
platinum catalysis and, 303
photodecomposition of, hydrazine formation in, 352
quadrupole coupling constant of, 180-81
spectrum line breadth of, 168
synthesis of, iron catalysis of, 291-92
Zeeman effect and, 152, 166-68
- Ammonium fluoride, potassium fluoride-water system, 30-31
- Ammonium nitrate, calcium nitrate-water system, 31
- Ammonium tetrametaphosphate, structure of, 249
- Ammonium trinitrate, structure of, 250
- Aniline
dissociation constant of, 46
iodine reaction with, catalysis and, 273
- Anthracene
molecular structure of, 227-28
naphthalene mixed crystals, transfer of energy in, 145
- Antimony
irradiation products of, 86-87
lead-sodium system, solid phases of, 30
lead-sodium-zinc system, 32
- Argon
compressibility of, 1
virial coefficients of, 2
- Arsenate, arsenite system, equivalent redox potential of, 110
- Arsenic
irradiation products of, 87
lead-sodium system, solid phases of, 30
Arsenic trichloride, molecular structure of, 155
Arsenic trifluoride, molecular structure of, 220
- Arsenite, arsenate system, equivalent redox potential of, 110
- Arsenous chloride, molecular structure of, 226
- Ascorbic acid, chlorophyll reduction and, 377
- Azide, Hill reaction inhibition and, 369
- Azo-hapten, serum albumin binding and, 416
- Azulene
absorption, naphthalene absorption and, 141
energy level calculations, methylation and, 141
- B
- Band theory
basic concepts of, 187-99
Brillouin zones and, 192-93, 194
constant energy surfaces and, 195
on electronic state density, 195-96
of metals, 193-97
wave function of, 193, 194
crystallography and, 187-216
electronic structure and, 199-214
electric conduction-insulation differences and, 196-97
electron acceleration and, 199
electron mass and, 198-99
electron motions and in band top, 197-98
electric field on, 196
and electron potential, periodic, 192
interstitial alloys and, 202
limitations of, 214-15
in metals, 193-97
divalent, 195
electron motions in, 196
polymorphism of, 199-204
wave number vector, 192
see also Crystallography
- Barium oxide, reduction of, 11
- Barium titanate, phase transitions of, 21
- Benzaldehyde, Hill reaction and, 370
- Benzene
absorption band of, 144
cyclohexane system, 29
entropy of mixing of, 54
derivatives, spectra of, 141
energy level calculations, 138
valence bond method, 139
entropies of dilution in, empirical, 391, 392
heat of dilution in, empirical, 393

heat of fusion of, 4
 n-heptane system, 29
 hydrogenation of, catalytic, 293, 299
 iodine complex, heat of formation of, 59
 lauroyl peroxide decomposition in, 261
 methyl alcohol system
 dielectric constant of, 63
 phases of, 28
 perturbation of, 145
 phenylcarbinol etherification in, 278
 polystyrene in, light scattering curve of, 397
 propane system, liquid-gas phases of, 27
 silver perchlorate complex, structure of, 248-49
 symmetry of, electronic band structures and, 142-43
 thermodynamic properties of, 11
 2,2,3-trimethylbutane system, 29
 vibration frequency of, 138
 Benzoic acid
 dimethyl substituted, acid catalyzed esterification of, 277
 o-xylene sulfonate-water system, solubility in, 32
 Benzoin condensation, isotope effect of, 73
 o-Benzoquinone, Hill reaction and, 370
 oxidation in, 366
 Benzoyl peroxide
 decomposition of, 263
 chain termination types and, 263
 inhibitors on, 263
 photosensitized polymerization and, 264, 353-54
 Benzylamine, pyrolysis of, 266
 Benzyl bromide, pyrolysis of, 266
 Berkelium, chromatographic separation of, 334
 Beryllium, isotopes
 and alpha emission, delayed, 93
 production of, 89
 Beryllium chloride, and dimethylberyllium, isomorphism of, 248
 Beryllium fluoride, binary systems of, 24
 Biphenyl
 steric hindrance of, on absorption, 132-33
 symmetry of, 133
 Biphenylene, energy level calculations, 137

Bismuth
 fission of
 ionization products of, 88
 mechanism of, 88
 product curve for, 88
 isotopes
 and alpha emission, delayed, 93
 lead spallation products and, 87
 neutron binding energies of, 89
 lead-magnesium-potassium system, 32
 spallation of
 high energy, 87
 polonium isotopes and, 87
 tin mixture, ultrasonic sound velocity in, 61
 Bond dissociation energies and kinetics, 265-68
 Borazole, energy level calculations, 137
 Boric acid, heat of dilution of, 6
 Borine carbonyl, molecular structure of, 226
 Boron
 compounds, structure of, 246-47
 hydrides, structure of, 247
 isotopes
 and alpha emission, delayed, 93
 variations in, 70
 Boron fluoride
 molecular addition complexes of, 248
 Brass, see Copper, zinc alloy
 Bromides
 n-alkyl, rotation in, 230
 nortricyclyl, reactivity of, 275
 thiosulfate reactions with, kinetics of, 280
 Bromine
 carbon tetrachloride system, liquid-vapor equilibrium data and, 58
 fission of, 88-89
 specific interaction complexes of, 59
 tetramethylammonium bromide system, phases of, 26
 Bromine fluoride, molecular structure of, 221
 Bromomalonic acid
 decarboxylation of, carbon isotope reaction rate of, 71-72
 maximum isotope effect of, 72-73
 Bromosilane, molecular structure of, 223-24
 n-Butane
 methyl radicals on, 344

sulfur dioxide reactions with, 355
 Butene, hydrogen mixtures, mercury photosensitized reaction of, 349-50
 1-Butene
 oxidation of, aluminum borohydride and, 259
 propene system, liquid-gas phases of, 26-27
 pyrolysis of, 266
 sulfur dioxide reactions with, 355
 vapor pressure of, 22
 iso-Butene, pyrolysis of, 267
 Butyl acrylate, and styrene, photosensitized copolymerization of, 354
 t-Butyl hydroperoxide, decomposition of
 di-t-butyl peroxide on, 260
 in organic solvents, 261
 t-Butyl peroxide
 pyrolysis of, 266
 thermal decomposition of, 261
 Butyl phenyl ether, hydrochloric acid solubility in, 26
 1-Butyne, vapor pressure of, 2

C

Cadmium
 isotopes, separation of, by electrolytic migration, 76
 tin mixtures, ultrasonic sound velocities in, 61
 Calcium carbonate, oxygen isotope in, temperature on, 69-70
 Calcium chloride
 acetic acid-water system, volatility and, 31
 activity coefficient of, 47
 Calcium nitrate, ammonium nitrate-water system, 31
 Calcium oxide
 aluminum oxide-ferric oxide-silica-sodium oxide system, phases of, 33
 ferric oxide-ferrous oxide system, oxygen activity of, 30
 Californium, chromatographic separation of, 334
 Cannizzaro reaction, isotope effect of, 73
 Carbohydrate oxidation, in respiration, mechanism of, 363
 Carbon
 graphite structure determi-

- nation, 247
 - isotopes of
 - determination of, 68-69
 - hydrogen cyanide-cyanide ion equilibrium and, 75
 - malonic acid decarboxylation and, 71
 - propane mass spectrum and, 70
 - propane thermal cracking and, 71
 - separation of, by chemical exchange, 77-78
 - separation of, by distillation, 76-77
 - separation of, by thermal diffusion, 74
 - transmutations of, 91-92
 - variations in, 70
- radioactive, diacetyl peroxide decomposition and, 262
- tetrahedral hybridization of, 180
- titanium system, phase diagram of, 24
- Carbon dioxide
 - absorption of, in photosynthesis, isotope effect of, 73
 - conductance determination and, 46
 - fixation, phosphoglyceric acid production and, 363
 - on fluorescence, photosynthesis and, 362
 - ketene vapor photodecomposition and, 356
 - molecular structure of, microwave spectroscopy and, 218
 - reduction of
 - chemistry of, 363
 - Hill reaction and, 364-65, 366-68
 - quantum requirements of, 370-74
 - thermodynamic properties of, 1
 - virial coefficients of, 2
 - see also Photosynthesis
- Carbon monoxide
 - adsorption, on iron synthetic ammonia catalysts, 294
 - heat of dissociation of, 12
- Carbon tetrachloride
 - acetyl peroxide decomposition and, 261-62
 - benzoyl peroxide decomposition in, 263
 - bromine system, liquid-vapor equilibrium data and, 58
 - molecular structure of, microwave spectroscopy and, 218
- neopentane system, molecular parameters of, 54
- perfluoromethylcyclohexane system, critical temperature and, 29
- Carbonyl selenide, dipole moment determination, microwave spectroscopy and, 162
- Carbonyl sulfide, dipole moment determination, microwave spectroscopy and, 162
- Carboxypeptidase, irradiation of, 117
- Carotenoids, photosynthesis and, 374
- quantum yield and, 375-76
- Catalysis
 - acidic and basic, 271-74
 - mechanism of, 271-72
 - adsorption and, 287-91
 - and alcohol sulfation, 274
 - by alloys, 295-96
 - contact, 287-303
 - cracking and, 300-2
 - and diazotization, in nitrous acid solution, 274
 - film orientation on, 293
 - Fischer-Tropsch synthesis and, 299-300
 - reaction rate of, 300
 - heterogeneity on, 291
 - hydrogenation mechanisms and, 298-99
 - ionization theory of, 294-95
 - kinetics of, 291-92
 - magnetism and, 292-93
 - and nitration, aromatic, 273-74
 - oxidation and, 302-3
 - polarization on, 297
 - pore size and distribution on, 292
 - pre-carbiding and, 300
 - pseudo acid dissociation and, 272-73
 - radioactivity and, 300
 - semiconductors and, 297
 - solid state and, physics of, 294-98
 - spatial factors on, 293
 - types of, 297-98
 - valence induction and, 293
 - see also Adsorption; and Surfaces
- Cellulose, esterification of, with p-toluenesulfonyl chloride, 277
- Cellulose acetate, acetone-chloroform system, phase diagram of, 399
- Cellulose octaacetate, alkaline hydrolysis of, 276
- Cerium
 - phases of, contraction and, 246
- water photo-oxidation and, 358
- Chlorex, heat of mixing of, 6, 12
- Chlorine
 - aliphatic, tertiary, hydrolysis of, 274-75
 - cation, chlorination and, 273
 - isotopes of
 - mass determination of, 164
 - separation of, by electrolytic migration, 76
 - manganese ion photochemical reaction with, 358
 - metallic compounds, energy formation of, 14
 - nuclear spin determination, 162-63
 - in perfluoro-n-heptane, solubility of, 59-60
- Chlorine dioxide, molecular structure of, 225
- Chlorine monoxide, molecular structure of, 225
- Chloroacetylene, hyperfine structure of, conjugation on, 159
- p-Chloroaniline, dissociation constant of, 46
- 1-Chloro-2,4-dinitrobenzene, amine reactions with, 276
- bis- β -Chloroethyl ether, hydrolysis of, 280
- Chloroform
 - acetone system, heat of mixing of, 53
 - acetone-cellulose acetate system, phase diagram of, 399
- 1-Chloro-4-iodobenzene, ethane system, critical temperature and, 29
- Chloroparaffins, oxidation kinetics of, 258
- Chlorophyll
 - energy transfer and, 378-79
 - excitation level on, 379
 - fluorescence of, 144
 - quinone on, 370
 - photocatalysis by, hydrogen transfer and, 376-77
 - photosynthesis and, 374
 - quantum yield and, 375, 376
 - photosynthetic unit and, 378
 - reduction of, ascorbic acid and, 377
- Chloroplasts
 - activity of, 365
 - Hill reaction and, 365-66
 - instability of, 365
 - variability of, 365
- 2-Chloropropane, pyrolysis of, 267

- Chlorosilane, molecular structure of, 223
- Chlorotrifluoroethylene, solid polymer, solubility of, 27
- Chromatography, ion-exchange, 331-33
- columns, 331
- constant distribution coefficient of, 331
- development of, 331-32
- fractionating efficiency of, 332
- rate dependent, 331-32
- plate theory and, 332
- separations by, 333-36
- of actinides, 334
- of alkali metal cations, 335
- of alkaline earths, 335
- biochemical, 336
- of columbium, protactinium, and tantalum, 335
- of hafnium and zirconium, 334-35
- of halides, 336
- of rare earths, 333
- of transition elements, 335-36
- simplification of, 332
- swelling on, 333
- temperature on, 332
- Chromium
- iron alloy, phase diagram of, 203
- solid, vapor pressure determination and, 23
- Chromium oxide, catalysis by, 299
- oxidation and, 302
- Chymotrypsin, dimerization of, 413
- Coal tar components, solubility of, 32
- Cobalt
- aluminum alloy
- Brillouin zone of, 213-14
- monoclinic, structure of, 245
- monoclinic, valence and, 245-46
- aluminum-iron-nickel alloy, electron concentration of, 212
- iron alloy, magnetic moments of, 237
- Cobaltic fluoride, thermodynamic properties of, 11
- Cobaltous fluoride, thermodynamic properties of, 11
- Cobaltous oxide, structure of, temperature on, 238
- Colloids
- aerosols, 418-19
- concentration of, 419
- deposition and, 419
- light scattering measurements and, 419
- types of, 418
- Brunauer-Emmett-Teller theory and, 417-18
- adsorption isotherms and, 417
- energy of liquefaction and, 417-18
- surface energy and, 418
- chemistry of, 403-20
- detergents, 414-16
- dyes, 416
- electrolytic, properties of, 404
- electron microscopy and, 403
- extrinsic, 416-20
- gels, 419-20
- macromolecularity and, 419-20
- rigidity of, 420
- intrinsic, 404-16
- lyophobic
- potential of mean force and, 417
- shape of, 417
- stability of, 416-17
- macromolecular, 403
- molecular kinetic methods and, 404
- proteins, 404-14
- stability of, thermodynamic, 403
- see also Proteins
- Columbium, chromatographic separation of, 335
- Combustion, heat of, 9-10
- Compressibility, of gases, 1-2
- equation of state and, 63
- Conductance
- conductivity cell determination technique, 46
- dissociation constants and, 46
- electrolytic, 45-46
- second Wien effect and, 46
- Copper
- fission of, 88-89
- irradiation products of, 87
- isotopes, separation of, 76
- metallic, gaseous hydrogen chloride and, 10
- nickel alloy, catalysis by, 295
- nitrogen adsorption on, 288
- polymorphism of, 199, 200
- zinc alloy
- electron concentration of, 208
- structure of, 206-7, 208
- Copper oxide, cuprous-cupric oxide system, conductivity of, 303
- Cracking, catalytic, 300-2
- carbonium ions and, 301-2
- distribution products of, 302
- hydrogen-ion exchange and, 302
- reaction rate of, 301
- surface of, 301
- Crystallography
- band theory and, 187-216
- electronic structure and, 199-214
- experimental, 235-50
- Heitler-London method and, 187
- neutron diffraction and, 235-42
- phenomena of, 187
- Sommerfeld free electron theory of, 187-91
- density of states and, 190-91
- occupied free electron states and, 189-90
- potential energy curve of, 187-88
- thermal excitation and, 191
- wave function of, 188-89
- work function and, 190
- see also Band theory;
- Molecular structure;
- Neutron diffraction; and
- X-ray crystallography
- Curium, chromatographic separation of, 334
- Cyanide, on photosynthesis, 372
- Cyanine dyes
- absorption maximum of, 125
- energy level calculations, one-dimensional box method, 135
- extreme and intermediate structures of, energy difference between, 126, 128-29
- light absorption and, 122
- resonance and, 122
- structure of, 122
- unsymmetrical, wave length maximum and, 129
- Cyanogen, linear structure of, 225
- Cyanogen chloride, hyperfine structure of, conjugation on, 159
- Cyclobutane, molecular structure of, 222
- Cyclohexadiene, energy level calculations and, 137
- Cyclohexane
- benzene system, 29
- entropy of mixing of, 54
- cyclohexyl hydroperoxide decomposition in, 262
- ethylene chlorohydrin

- system, 29
 n-hexane system
 entropy of mixing of, 55-56
 thermodynamic properties of, 5
 iodine solubility in, 26
 isomers, molecular structure of, 226
 methylcyclohexane system, entropy of fusion of, 60
 nitrobenzene system, adsorption of, 62
 polystyrene in
 critical temperature of, 398
 precipitation temperature of, 398
 Cyclohexanedicarboxylic acid isomers, acid catalyzed esterification of, 277-78
 Cyclohexene, hydrogenation, nickel catalysis of, 291
 Cyclohexyl hydroperoxide, decomposition of, 262
 Cyclooctatetraene
 molecular structure of, 226
 thermodynamic properties of, 10
 Cyclopentadiene, energy level calculations, 137
 Cyclopentane
 deuterated, molecular structure of, 227
 mercury photodecomposition of, 350
 Cyclopropane
 bond angles of, 181
 methyl radicals on, 344
 thermodynamic properties of, 11
- D
- Decaborane, molecular structure of, 228-29
 Decafluorocyclopentane, molecular structure of, 222-23
 Decahydronaphthalene systems, freezing points of, 60
 Decane
 heptane-octane system, eutectics of, 32
 heptane-octane-hexanone system, equations for, 33-34
 mercury photodecomposition of, 350-51
 n-Decane systems, entropies of mixing of, 55
 Detergents, 414-16
 micelles of, 415
 solid powder suspensions of, 416
 solubilization and
 loci of, 415
 phenomena of, 415
 Deuterium
 adsorption, hydrogen and, 294
 on chemical equilibria, 71
 compounds, molecular fragmentation by electron impact and, 70
 in hydrogen, mass spectrometric analysis of, 68
 natural abundance of, 70
 potassium salt solubility in, 25
 separation of
 chemical exchange on, 75-76
 distillation and, 76
 see also Hydrogen; and Tritium
 Deuterium oxide, polymerization in, 106
 Diacetyl peroxide, decomposition of, 262
 Diarylethane
 catalytic cracking of, 301
 catalytic decomposition of, 292
 Diazomalonate salts, hydrolysis of, 276
 Dibenzoylmethane
 chelated
 emission from, 144
 polarized spectrum of, 142
 polarized fluorescence of, 144-45
 Diborane, vapor pressure of, 2
 1,2-Dibromoethane isomer, molecular structure of, 227
 Di-n-butyl ether, dimethylphenylmethyl hydroperoxide decomposition in, 261
 Di-n-butyl peroxide
 t-butyl hydroperoxide decomposition and, 260
 decomposition of
 photosensitized, 355
 products of, 260
 reaction steps of, 260
 in solution, 260
 vapor phase, 260-61
 vinyl acetate photopolymerization and, 353
 Dibutylphthalate, chlorotrifluoroethylene solubility in, 27
 Dibutylsebacate, chlorotrifluoroethylene solubility in, 27
 Dichlorodiphenyltrichloroethane, vapor pressure of, 22
 1,2-Dichloroethane isomers, system of, 60
 1,2-Dichloropropane, pyrolysis of, 267
 Dicinnamyl, polarized spectrum of, 142
 Dielectric constants, measurement of, 63
 α -Diethylaminoisobutyronitrile, decomposition, kinetics of, 281
 Diethyl ether, lauroyl peroxide decomposition in, 261
 Diethyl phosphite, catalytic hydrolysis of, 271
 Diffusion, 44-45
 coefficient of
 conductometric determination method, 44-45
 diaphragm cell determination technique, 45
 Gouy interference method for, 44
 of radioactive elements, 45
 dilute solutions and, 40-43
 electrophoresis and, 41
 ionic atmosphere and, 40-41
 relaxation time effect and, 41
 Fick's first law and, 38-39
 Gibbs's chemical potential and, 39
 multicomponent, Fick's first law and, 39-40
 of proteins, 406-7
 single salt, 41-42
 mobility term of, 41-42
 theory of, 38-40
 trace-ion, 42-43
 diffusion coefficient
 limiting law for, 43
 factors of, 42
 see also Thermal diffusion
 Difluoroethylene, molecular structure of, 221-22
 microwave spectroscopy and, 218
 Diisopropyl fluorophosphate, hydrolysis, catalysis of, 271
 Diisopropyl perosydicarbonate, decomposition of, 263
 Dimethyl, steric hindrance of, on absorption, 132-33
 Dimethylberyllium and beryllium chloride, isomorphism of, 248
 structure of, 247
 2,2-Dimethylbutane, iodine solubility in, 26
 Dimethyl disulfide, vapor pressure, 2

Dimethyl ether, methyl radicals on, 344
 Dimethyl mercury
 and ethylene oxide, vapor phase photodecomposition of, 347
 photodecomposition of, 346
 2,4-Dimethylpentane, negative azeotropy of, 57
 Dimethylphenylmethyl hydroperoxide, decomposition of
 ferrous iron and, 264
 in organic solvents, 261
 in styrene, 262
 o-Dinitrobenzene, Hill reaction oxidation and, 366
 Dinitrophenol, Hill reaction inhibition and, 369
 p-Dioxane, molecular structure of, 227
 Diphenyl, energy level calculations, 138
 Diphenyldiazomethane
 ethyl alcohol reaction with, catalysis and, 274
 trifluoromethyl benzoic acid reaction with, velocity constants of, 277
 Diphenyl ether
 hydrochloric acid solubility in, 26
 vapor pressure determination of, 23, 61
 Diphenylmethane, heat of combustion of, 10
 Dissociation
 constant, of weak bases, 47-48
 energy of, 12-13
 Divinylbenzene
 polystyrene copolymer exchange capacities of, 318-19
 hydration of, 320-21
 porosity and, 318
 styrene copolymer exchange groups and, 315
 maleic anhydride and, 316-17
 preparation of, 312-14
 structure of, 314
 Dodecafluorocyclohexane, molecular structure of, 222-23
 Dodecylcyclohexane, vapor pressure of, 22
 Dotriacontane, cis-decahydronaphthalene system, freezing point of, 60
 n-Dotriacontane, n-decane system, entropy of mixing of, 55
 Dyes, colloidal, 416
 see also Absorption, light
 Dysprosium, alpha activity

of, 91

E

Electrolytic solutions, 37-48
 conductance of, 45-46
 and diffusion, theory of, 38-40
 dissociation of, electric fields on, 46
 and gases, solubility of, 6
 moving boundary systems, 46-47
 nonaqueous, 7
 simultaneous irreversible processes, 37-38
 dissipation functions and, 38
 force gradients of, 37
 fundamentals of, 43
 standard cell potentials and, 47
 thermodynamic properties and, 47-48
 see also Nonelectrolytic solutions; and Solutions
 Electrophoresis
 dilute solution diffusion and, 41
 of proteins, 408-9
 Entropy
 of gas adsorption, 288
 of inorganic elements, 14
 of mixing
 of high polymers, 383-401
 of nonelectrolytic solutions, 52
 Enzymes, proteolytic, 414
 Equilibria
 of binary systems, 23-30
 of high polymers, 397-99
 prediction of, 30
 of multicomponent systems, 32-34
 graphic representation of, 32-33
 of high polymers, 399-400
 of one-component systems, 21-23
 phase diagrams and, 21-34
 of ternary systems, 30-32
 volatile systems and, 25
 experimental methods for, 27-29
 Esters
 amine reactions with, kinetics of, 277
 halogenation of, catalysis and, 272
 Ethane
 1-chloro-4-iodobenzene system, critical temperature of, 29
 decomposition of, sodium on, 352
 rotational barrier of, 13
 solubility of

in liquid nitrogen, 56-57
 in liquid oxygen, 26, 56-57
 in water, 26

virial coefficients of, 2
 Ethyl acetate, alkaline hydrolysis of, dielectric constant change and, 276
 α -Ethylacetoacetic ester, dissociation rate of, catalysis and, 272
 Ethyl alcohol
 diphenyldiazomethane reaction with, catalysis and, 274
 iodine solubility in, 26
 isotope effect of, reaction completion and, 73
 potassium nitrate-water system, volatility and, 31
 radioactive, catalysis and, 299-300
 sodium sulfate-water system, solubility in, 31
 Ethylbenzene, pyrolysis of, 265
 toluene vapor on, 265-66
 Ethyl benzoate, alkaline hydrolysis of, isotope effect of, 73
 Ethyl chloride, decomposition, catalytic, 292
 Ethylene
 absorption band of, 144
 energy level calculations, valence bond method, 139
 hydrogenation, nickel catalysis and, 291, 298-99
 ketene vapor photodecomposition and, 356
 solubility of, in liquid oxygen, 26, 56-57
 vibration frequency of, 138
 virial coefficients of, 2
 Ethylene chlorohydrin, cyclohexane system, 29
 Ethylene glycol, sodium sulfate-water system, liquid phases of, 31
 Ethylene oxide
 acetaldehyde system, 28
 bond angles of, 181
 and dimethyl mercury, vapor phase photodecomposition of, 347
 methyl radicals on, 344
 vapor phase photodecomposition of, 347
 water system, 28
 Ethyl ether, iodine solubility in, 26
 Ethylphenylacetate, ethyl- α -phenylbutyrate system, Raoult's law and, 28
 Ethyl- α -phenylbutyrate, ethylphenylacetate

- system, Raoult's law and, 28
- Ethylphenyl ether, hydrochloric acid solubility in, 26
- Ethyl silicate, hydrolysis of, 276
- Europium, water photo-reduction and, 353-59
- F**
- Ferric oxalate, Hill reaction and oxidation and, 366
quantum requirements of, 368
- Ferric oxide
aluminum oxide-calcium oxide-silica-sodium oxide system, phases of, 33
calcium oxide-ferrous oxide system, oxygen activity of, 30
ferrous oxide-silica system, 30
- Ferricyanide, Hill reaction and oxidation and, 366
quantum requirements of, 368
- Ferrous oxide
calcium oxide-ferric oxide system, oxygen activity of, 30
ferric oxide-silica system, 30
structure of
magnetic, 238
temperature on, 238
- Fischer-Tropsch synthesis, 299-300
- Fission, nuclear, see Nuclear theory; and Radioactivity
- Fluorine
dissociation energy of, 13
inorganic compounds, molecular structure of, 220-21
- Fluorine chloride, nuclear mass determination of, 164
- Fluorine oxide, molecular structure of, 220-21
- Fluorobenzene, fluorescence of, 143
- Fluorocarbons
molecular structure of, 221-23
nonelectrolytic solutions of, 55-57
thermodynamic properties of, 5-6
- Fluoromethane, molecular structure of, 222
- Formaldehyde, amide reactions with, 281
- Formamide, liquid, thermal decomposition of, 281
- Formic acid, dehydrogenation, nickel-copper catalysis of, 295
- Francium, isotopes, thorium spallation products and, 87
- Fucoxanthol, photosynthesis and, 375
quantum yield and, 376
- Fulvalene, energy level calculations, 137
- Fumaric acid, oxidation, osmium tetroxide and, 259
- Furfural, water system, solubility of, 27-28
- G**
- Gadolinium, alpha activity of, 91
- Gamma-rays, polymerization by, 105
- Gases
compressibility of, 1-2
equation of state and, 63
liquified, solids in, solubility of, 24-25
solubility of, in liquids, 59-60
thermodynamic properties of, 1-2
virial coefficients of, 1
- Germanium, isotopes of, 70
- Globulin, protein, dimerization of, 413
- Glucose, mutarotation of, in aqueous solution, 272
- Glucose pentaacetate, alkaline hydrolysis of, 276
- Glycine
deamination of
by nitrous acid, 281
by x-rays, 117
diffusion coefficient of, 44
molar compressibilities of, 48
- Glycolamide, molar compressibilities of, 48
- Glycylglycine, molecular structure of, 228
- Gold
alpha activity of, 91
palladium alloys, para-hydrogen conversion for, 296
tin alloys, liquid, 61
- H**
- Hafnium, chromatographic separation of, 334-35
- Halides
alkali
conductances of, 45-46
heats of formation of, 7, 63
alkyl, tertiary, phenol alkylation with, 278
aluminum, energies of formation of, 10
butyl, tertiary, rotation of, 230
chromatographic separation of, 336
heat of dilution of, 6
heat of hydrolysis of, 12
methyl, interatomic distances of, 155
thermodynamic properties of, 4
- Halogens
complexes with aromatic hydrocarbons, equilibrium constants of, 58
hydrolysis of, 275-76
radioactive, photolyzed radical identification and, 358
- Haptenic dyes, solutions of, 416
- Heat
of adsorption, surface covered and, 289
capacity
of gases, 12
high temperatures and, 9
of inorganic elements, 14
of combustion, 9-10
of formation, of alkali halides, 63
of mixing
of binary alkanes, 55
of high polymers, 383-401
of polymerization, 9
of reaction
determination methods of, 12
of inorganic compounds, 10-11
of organic compounds, 11-12
- Helium
isotope of mass, 3
diagram of state of, 3
separation of, 78
vapor pressure of, 22
isotopes
differences in, 78
 λ -temperatures of, 3
ratio of, 70
separation of, by thermal diffusion, 74
solutions of, 2-3
superfluidity of, 3, 78
tritium decay and, 83-84
two-fluid theory and, 3
liquid-solid transition of, 3-4
low temperature adsorption

- of, λ -phenomenon and, 8
 - thermodynamic properties of, 2-4, 14
 - virial coefficient of, 1, 2
 - Heptalene, energy level calculations, 137
 - Heptane
 - decane-octane system, eutectics of, 32
 - decane-octane-hexane-nonane system, equations for, 33-34
 - methylethylketone-toluene system, thermodynamic consistency of, 32
 - n-Heptane
 - n-hexadecane system, entropy of mixing of, 55
 - nonelectrolytes in, solubility of, 6
 - perfluoro-n-heptane-2,2,4-trimethylpentane system, solubility parameters of, 56
 - Hexachlorodisiloxane, molecular structure of, 224
 - Hexachloroethane, heats of transition of, 12
 - Hexachlorosilane, molecular structure of, internal rotation and, 223
 - Hexadecane, vapor pressure of, 2, 22
 - n-Hexadecane, hydrocarbon systems, entropy of mixing of, 55
 - Hexadecene, tetradecane system, Raoult's law and, 28-29
 - Hexafluoropropene, molecular structure of, 222
 - Hexamethylbenzene, π electron transitions of, 141
 - Hexamethylcyclotrisiloxane, molecular structure of, 224
 - Hexamethyldisiloxane, molecular structure of, 224
 - Hexamethylethane, transition points of, 21
 - Hexane
 - decane-heptane-nonane octane system, equations for, 33-34
 - dehydrogenation of, catalytic, 297
 - iodine solutions in, irradiated, iodine atom lifetime in, 357
 - iodoacetic acid photodecomposition in, dissolved oxygen on, 357
 - n-Hexane
 - cyclohexane system
 - entropy of mixing of, 55-56
 - thermodynamic properties of, 5
 - n-hexadecane system, entropy of mixing of, 55
 - n-Hexanol, aluminum nitrate-water system, water activity in, 31
 - Hill reaction, 364-70
 - carbon dioxide reduction and, 364-65, 366-68
 - mechanisms of, 367
 - carboxylation and, 368
 - chloroplast preparations and, 365-66
 - concentration ratio of, 367-68
 - dismutation of energy and, 368
 - high energy phosphates and, 368
 - inhibition of, 369
 - hydrocyanic acid and, 369
 - hydroxylamine and, 369
 - rate limiting enzyme and, 369
 - ultraviolet light and, 369
 - kinetics of, 364
 - oxidants of, 366
 - potential of, 366
 - pyruvic acid, 367
 - quinone, 370
 - oxygen liberation by, 364
 - quantum requirements of, 368
 - reaction rate of, maximum, 369
 - reductants of, triphosphopyridine nucleotide, 366-68
 - in whole cells, 369-70
- Hollandite, structure of, 249
- Hydrazine
 - formation of, in ammonia photodecomposition, 352
 - pyrolysis of, 266
- Hydrazobenzene, rearrangement rate, in hydrochloric acid solutions, 278
- Hydrazoic acid, molecular structure of, 224
- Hydrobromic acid
 - diffusion coefficient of, 45
 - in hydrocarbons, solubility of, 60
 - velocity constant for, 271
- Hydrocarbons
 - aliphatic, sulfur dioxide reactions with, 355
 - aromatic
 - complexes with halogens, equilibrium constant of, 58-59
 - iodine solutions, ultraviolet absorption peak of, 58
 - one-dimensional box energy level calculations, 135
- valence bond energy level calculations, 140
- binary
 - solid-liquid phase diagrams of, 24
 - systems of, 29
- combination of, hydrogen atom initiation of, 268
- entropy of mixing of, 55
- molecular symmetry on, 55
- Fischer-Tropsch synthesis of, 299-300
- gaseous, solubility in water, 26
- hydrobromic acid in, solubility of, 60
- mass spectra of, 103-4
- methane incorporation in, 300
- nonelectrolytic solutions of, 55-57
- oxidation of
 - hydrogen bromide on, 258-59
 - organic peroxide intermediates and, 259
- paraffin
 - methyl radical reaction with, 268
 - vapor pressure determination of, 23
- solubility of, in liquid gases, 56-57
- thermodynamic properties of, 5-6, 10
- Hydrochloric acid
 - conductance of, 45-46
 - diffusion coefficient of, 45
 - gaseous, metallic copper and, 10
- hydrazobenzene rearrangement in, 278-79
- solubility of, in ethers, 26
- velocity constant for, 271
- Hydrocyanic acid, Hill reaction inhibition and, 369
- Hydrogen
 - adsorption of
 - deuterium and, 294
 - on metals, 289-90
 - ortho-para conversion and, 290
 - solution effect and, 290
 - atomic
 - hydrocarbon combination and, 268
 - olefin interaction with, 268
 - butene mixtures, mercury photosensitized reaction of, 349-50
 - hydrogen peroxide reaction with, 268
 - ion exchange
 - catalysis and, 303
 - catalytic cracking and,

- 302
isotopes of
mass spectrometric analysis of, 68
separation of, by chemical exchange, 75-76
separation of, by distillation, 76
mercury photodecomposition of, 348-49
methyl chloride mixture, mercury photosensitized reaction of, 351-52
olefin mixtures, mercury photosensitization of, 350
oxidation by, on equivalent redox potential of water, 112
thermodynamic properties of, 14
vapor pressure of, 1
see also Deuterium; and Tritium
- Hydrogenation**
of acetone, catalytic 299
of acetylene, catalytic 298-99
of benzene, catalytic, 293, 299
and catalysis, mechanisms of, 298-99
of cyclohexene, nickel catalysis of, 291
of ethylene, nickel catalysis and, 291, 298-99
of nitrobenzene, catalytic, 298
styrene, catalytic, 295
- Hydrogen bromide**, on hydrocarbon oxidation, 258-59
- Hydrogen fluoride**, molecular structure of, 221
- Hydrogen peroxide**
aqueous
dielectric constant of, 63
solid solutions and, 25
decomposition of
manganese oxide catalysis of, 293
nickel-copper catalysis of, 295
polarization on, 297
hydrogen reaction with, 268
on irradiated biological solutes, 114-15
effectiveness of, 115
reduction by, 113-14
- Hydrolysis**
acid catalyzed, rate constants of, 279-80
cation variation and, 276
kinetics of, 274-77
- Hydroxylamine**, Hill reaction inhibition and, 369
- Hydroxyl radical**
gaseous, oxidative power of, 112
on irradiated biological solutes, effectiveness of, 115
- I
- Indium**
heat capacity of, 5
natural radioactivity of, 84
Insulin, bovine, structure of, 413
- Interferometer**, ultrasonic, wave length measurement and, 48
- Iodide**, iodine system, equivalent redox potential of, 110
- Iodine**
acetone complex of, 59
aniline reaction with, catalysis and, 273
benzene complex, heat of formation of, 59
heat of solution of, 6
hexane solutions of, irradiated, iodine atom lifetime in, 357
in hydrocarbons, aromatic, ultraviolet absorption peak of, 58
iodide system, equivalent redox potential of, 110
and methyl ethyl ketone, photochemistry of, 356-57
organic compounds, photodecomposition of dissolved oxygen on, 357
solubility of, 56-57
in organic solvents, 26
solutions of
organic, heat of solution of, 59
theory of regular solutions and, 57
specific interaction complexes of, 59
- Iodine chloride**, nuclear mass, determination of, 164
- Iodine fluoride**, molecular structure of, 221
- Iodine monobromide**, specific interaction complexes of, 59
- Iodine monochloride**, specific interaction complexes of, 59
- Iodoacetic acid**, photodecomposition in hexane, dissolved oxygen on, 357
- Iodoform**, ketone reaction with, catalysis and, 274
- Ion exchange polymers**, 309-37
adsorption and, 325
capacities of, 315-16
chelating, 317
chemical specificity and, 317
chemical structure of, 310-18
chromatography and, 331-33
separations by, 333-36
diffusion and
cross-linking on, 330
in gels, 330-31
particle size on, 330
equilibria, 322-28
and activity coefficients, evaluation of, 325
characteristics of, 322-23
charge and, 323-24
distribution of, 322, 232
nonuniformity and, 327-28
selectivity and, 324
solubility and, 327
theories of, 324-25
exchange capacities of, 318-19
future of, 336-37
Gibbs-Donnan equations and, 325-27
hydration of
entropy of, 320
gelation and, 320-21
heat of, 320
pressure on, 319-20
on volume, 320
kinetics of, 308-31
organic
development of, 311-12
exchange groups in, 315
preparation of, 312-14
properties of, 314-15
physical chemistry of, 310-22
polydictality and, 319
polymeric network structure on, 318
properties of, thermochemical, 321
reaction rates and, 328-29
diffusion on, 329
mass on, 329
structure on, 329-30
shape of, 318
strong acid
preparation of, 311
properties of, 311
structure of, 312
strong base, 315
and strong electrolytes, partition of, 322-25
swelling and
cross-linking and, 327, 328

internal stress of, 326
 screening effect and, 327
 thermodynamic activity and, 326
 synthesis of, 310-18
 titration of, 321
 weak acid, structure of, 312
 weak base, structure of, 313
 see also Polymerization
 Iridium, and nitrobenzene hydrogenation, catalysis of, 296
 Iron
 aluminum-cobalt-nickel alloy, electron concentration of, 212
 catalysis by, of ammonia synthesis and decomposition, 291-92
 chromium alloy, phase diagram of, 203
 cobalt alloy, magnetic moments of, 237
 ferrous, dimethylphenylmethyl hydroperoxide decomposition and, 264
 ferrous-ferric system, equivalent redox potential of, 110
 hydrogen adsorption on, electronic behavior and, 290
 manganese alloy, polymorphism and, 202-3
 in mercury, equilibrium solubility of, 61
 nickel alloy
 catalysis by, 295
 phase diagram of, 203
 polymorphism of, 200-1
 alloying elements on, 201-2, 204
 temperature and, 202
 Iron carbides, free energy of formation of, 299
 Isobutane, gaseous, compressibility of, 1
 Isobutene, thermodynamic properties of, 1
 Isocyanic acid, molecular structure of, 224-25
 Isomerization, catalytic, mechanisms of, 303
 Isothiocyanic acid, molecular structure of, 225
 Isotopes, 67-78
 abundance of, 67-70
 ratios of, 69-70
 temperature on, 69
 adsorption and, 294
 on chemical equilibria, 69, 71
 effects of, 70-73
 on mass spectra of molecules, 70-71
 measurement of, 67-69

density and, 68
 mass spectrometer and, 67-68
 microwave absorption and, 68-69
 on reaction rates, 71-73
 separation methods, 73-78
 centrifugation, 76
 chemical exchange, 75-76
 distillation, 76-77
 electrolytic exchange, 76
 electrolytic migration, 76
 electromagnetic, 77
 ion exchange, 77
 sweep diffusion, 77
 spectrometry, mass, thermal diffusion and, 74-75

K

Ketene
 acetone photodecomposition and, 348
 vapor, photodecomposition of, 356
 Ketones
 aryl alkyl, oxime formation in, 280
 halogenation of, catalytic, 272
 iodoform reaction with, catalytic, 274
 lithium reagents and, 258
 in paraffinic solvents, photodecomposition of, 351
 Kinetics, 255-81
 of alkylation, 278
 of ammonia synthesis and decomposition, catalytic, 291-92
 of aromatic nitration, 273
 batch process and, 256
 bond dissociation energies and, 265-68
 of catalysis, 291-92
 acidic and basic, 271-74
 heterogeneity on, 291
 pore size and distribution on, 292
 continuous flow stirred tank reactor and, 256-57
 batch process and, 257
 temperature rise technique and, 257
 of decarboxylation, 277
 of esterification, 277-78
 of fast reactions, 257-58
 of hydrogenation, catalytic, 291
 of hydrolysis, 274-77
 intermediates and, 255-56
 concentration of, 256
 stability of, 256
 ion exchange, 328-31
 ionic reaction rates and, 269-71

of isomerization, 279-80
 of nucleophilic reactions, 280
 of oxidation, 258-59
 and peroxides, organic, 259-64
 of polymerization, 264-65
 of pyrolytic reactions, 265-68
 of rearrangements, 278-79
 and salt dissociation, incomplete, 271
 of solvolysis, 274-77
 steady state properties and, 257
 of steric effects, transition states and, 280
 tubular reactor and, 256

L

Lactamide, molal compressibilities of, 48
 Lambda-point, low temperature helium adsorption and, 8
 Lanthanum, natural radioactivity of, 84
 Lanthanum chloride, activity coefficient of, 47
 Lanthanum ferricyanide, conductance of, 46
 Lanthanum sulfate, conductance of, 46
 Lauroyl peroxide, decomposition of, 261
 Lead
 antimony-sodium system, solid phases of, 30
 antimony-sodium-zinc system, 32
 arsenic-sodium system, solid phases of, 30
 bismuth-magnesium-potassium system, 32
 isotopes, neutron binding energies of, 89
 spallation products of, bismuth isotopes and, 87
 tin alloy, ultrasonic sound velocity in, 61
 Lead nitrate, sodium nitrate-water system, 31
 Lead oxides, oxygen system, equilibria of, 24
 Liquids
 compressed, equation of state of, 63
 gas solubility in, 59-60
 phase reactions of, radiation on, 104-17
 radiochemical equilibrium of, 104
 thermodynamic properties of, 1-2
 vapor pressure determination and, 22-23

- Lithium
isotopes
and alpha emission,
delayed, 93
separation of, by ion ex-
change, 77
tin fission products and,
89
magnesium alloy, polymor-
phism of, 200, 201
nuclear fragment emission
and, 89
solubility of, in liquid am-
monia, 61
Lithium borohydride, in aque-
ous acid solution, kinet-
ics of, 258
Lithium bromide, diffusion
coefficient of, 45
Lithium chloride, diffusion
coefficient of, 44-45
Lithium fluoride, beryllium
fluoride system, phase
diagrams of, 24
- M
- Magnesium
bismuth-lead-potassium
system, 32
lithium alloy, polymorphism
of, 200, 201
Magnetism
antiferromagnetism, 237-41
atomic spin alignment and,
238
ion displacements and, 238
lattice structure and, 237
magnetic order and, 239
x-ray diffraction and, 237
catalysis and, 292-93
ferrimagnetism, 239-40
ferromagnetism, 236-37
magnetic field and, 240
neutron diffraction, 235-42
paramagnetism, 235-36
Magnetite
ferrimagnetism and, 239
magnetic structure of, 239-
40
Maleic acid, oxidation of, os-
mium tetroxide and, 259
Maleic anhydride, styrene-
divinylbenzene copoly-
mer and, 316-17
Malonic acid, hydrolysis
of, 276
Malonic acid
decarboxylation of, 71-72
maximum isotope effect of,
72-73
Malonic ester, dissociation
rate of, catalysis and,
272-73
Manganese
ion, chlorine photochemical
reaction with, 358
iron alloy, polymorphism
and, 202-3
irradiation of, products of,
87
Manganese dioxide, catalysis
by, oxidation and, 302
Manganous fluoride, manga-
nous ion distribution
function and, 236
Manganous oxide
neutron diffraction pattern
of, 238
structure of
magnetic, 238, 239
temperature on, 238
Manganous sulfate, manga-
nous ion distribution
function and, 236
Melting points, determination
of, 22
Mercury
density of, distillation on,
76
iron in, equilibrium solubil-
ity of, 61
photosensitization by
of cyclopentane, 350
of decane, 350-51
of hydrogen, 348-49
of hydrogen-butene mix-
ture, 349-50
of hydrogen-methyl chlo-
ride mixture, 351-52
of hydrogen-olefin mix-
ture, 350
of methyl alcohol vapor,
351
of propane, 348-49
resonance lamp, 352
tin mixture, ultrasonic
sound velocity in, 61
Merocyanine dyes
resonance and, 130-132
stabilization of, 130-31
structural types of, 131-32
Mesitylene
dimethylphenylmethyl hy-
droperoxide decomposi-
tion in, 261
iodine solubility in, 26
Metals
catalytic, surfaces of, 293-
94
hydrogen adsorption on,
electronic behavior and,
289-90
polymorphism of, 199-204
interstitial alloys and, 202
proton adsorption on, 296
solid solutions of, band the-
ory and, 206
structure of
band theory of, 193-97
x-ray crystallographic
determination of, 245-47
see also Alloys
Methacrylonitrile, aqueous,
polymerization of, 106
Methane
in hydrocarbons, incorpora-
tion of, 300
propane system, liquid-gas
phases of, 27
virial coefficients of, 2
Methyl acetate, molecular
structure of, 225
Methylacetylacetone, disso-
ciation rate of, catalysis
and, 272
Methyl alcohol
benzene system
dielectric constant of, 63
phases of, 28
chloroplast activity stabili-
zation by, 365-66
cyclohexanedicarboxylic
acid esterification in,
277-78
dehydrogenation, nickel-
copper catalysis of, 295
internal torsion of, 164
methyl radicals on, 344
rotational barrier of, 13
thermodynamic properties
of, 13
vapor, mercury photodecom-
position of, 351
water system, coal tar com-
ponent solubilities in, 32
Methyl bromosilane, molec-
ular structure of, 223
Methyl chloride
deuterated, molecular
structure of, 155
hydrogen mixture, mercury
photosensitized reaction
of, 351-52
Methyl chloroformate, mo-
lecular structure of, 225
Methyl cyanide, molecular
structure of, 224
Methylcyclohexane, cyclo-
hexane system, entropy
of fusion of, 60
Methyldihydrothiophene-1-
dioxides, thermal disso-
ciation of, substitution
on, 264
Methyl ethyl ketone
entropy of dilution in, em-
pirical, 391, 392
heptane-toluene system,
thermodynamic consist-
ency of, 32
photochemistry of, iodine
and, 356-57
Methyl formate, molecular
structure of, 225
Methyl iodide, photodecom-
position of, 348
Methyl isocyanide, molecular
structure of, 224
Methyl methacrylate
polymerization of, photo-

- sensitized, 264-65
- and styrene, photosensitized copolymerization of, 353-54
- x-ray actinometry and, 99-100
- Methyl radical
 - acyl hydrogen abstraction and, 346-47
 - olefins and
 - fluoro-substituted, 354
 - interaction of, 350
 - paraffin hydrocarbon reactions with, 268
 - photochemical reactions of, 343-48
 - activation energies of, 344, 345
 - pre-exponential factor for, 267
 - steric factors of, 344, 345
 - unimolecular chain terminating, 346
 - rotational barrier of, 13
 - source of, 343-44
 - toluene reaction with,
 - steric factor of, 268
- Microwave spectroscopy
 - accuracy of, 219
 - assumed parameters and, 220
 - chemical analysis and, 165-66
 - limitations of, 165
 - dipole moment determination and, 160-62
 - accuracy of, 161
 - isotopic substitution on, 161-62
 - low vapor pressure on, 162
 - molecular symmetry on, 162
 - vibrational excitation on, 162
- of gases, 151-70
 - high pressure, 153
 - high-frequency, 153
 - high-resolution, 152
 - internal torsion and, 164-65
 - rotational satellites and, 164-65
 - tunneling transitions and, 164
- isotopic species and, 163
- analysis of, 68, 166
- isotopic substitution technique and, 219-20
- klystron oscillator and, 151-52
- line breadth and, 168-70
- dipole-dipole interaction and, 168
- frequency modulation on, 170
- lower limit of, 169
- pressure on, 168
- rotational state on, 168
- saturation effect and, 169-70
- temperature and, 168
- thermal equilibrium and, 170
- magnetic resonance absorption and, 153
- microwave energy modulation and, 152
- molecular structure determination and, 153-56, 157-59, 160
- accuracy of, 153-54
- asymmetry on, 155
- centrifugal distortion and, 155-56
- dipole moment and, 154
- isotope effect and, 155
- method of, 153
- moment of inertia and, 154
- quantum number and, 154
- nuclear magnetic moment determination and
 - valence bond on, 163
 - Zeeman effect on, 163
- nuclear mass determination and
 - time errors in, 164
 - zero-point vibration on, 163-64
- nuclear spin determination and, 162-63
- molecular suitability and, 163
- Planck's constant and, 219
- of radioactive atoms, 153
- resonance states and, 152
- and rotational spectra, molecular moment of inertia determination by, 219
- splitting of highly excited levels in, 230
- Stark effect modulation and, 152
- valence and, 156-60
 - on hyperfine structure, 156
- Zeeman effect and, 166-68
- modulation and, 152-53
- rotational magnetic moment and, 167
- see also Spectroscopy
- Molecular structure, 217-30
 - of binary solutions, properties and, 53
 - of carboxylic methyl esters, rotation and, 225
 - configurations and, 227-28
 - conjugated chain length, on light absorption, 124-25
 - crystallographic data and, 227-29
 - of cyanine dyes, resonance and, 122
 - determination of, microwave spectroscopy and, 153-56, 157-59, 160
 - dipole moment determination and, 160-62
 - of dyes, auxochromes and, 123
 - electron diffraction and, 217-19
 - experimental factors on, 217
 - intensity determination by, 218-19
 - radial distribution curve and, 218
 - rotating sector on, 218
 - successive approximation method and, 218
 - visual correlation technique of, 217
 - on entropy of mixing, excess, 55-56
 - of fluorides, inorganic, 220-21
 - interatomic parameters and, 217
 - intermediate, 123
 - intermediate and extreme, energy difference between, 126-29
 - intermolecular interactions and, 227
 - intramolecular motions and, 229-30
 - and light absorption, resonance structures and, 123
 - of merocyanine dyes, resonance and, 130-132
 - microwave spectroscopy and, 219-20
 - of molecular addition compounds, 59
 - molecular states and, 123-24
 - by neutron diffraction, 241-42
 - of nitrogen-containing molecules, 224-25
 - of nonelectrolytic solutions, 52-53
 - and nuclear quadrupole moments, molecular rotation on, 159-60
 - on polarization, 141
 - and rotation, potential barrier to, 230
 - of silane derivatives, 223-24
 - of siloxanes, 224
 - steric hindrance and, 132-34
 - symmetry and, 141-43
 - deductions from, 226-27
 - of unsymmetrical dyes, 129-30
 - and x-ray diffraction, interatomic parameters and, 217

- see also Crystallography;
Microwave spectroscopy;
and Spectroscopy
- Molybdenum trioxide, catalysis by, conductivity and, 297
- Monoacetone glucose, triacetyl derivative of, alkaline hydrolysis of, 276
- Monoethyl malonate ion, alkaline hydrolysis of, 275
- N
- Naphthalene, anthracene mixed crystals, transfer of energy in, 145
- Naphthalene
absorption, azulene absorption and, 141
energy level calculations and, 136-37, 139
fluorescence measurement and, 143-44
molecular structure of, 227-28
vibrational analysis of, 143
- α -Naphthaquinone sulfonate, Hill reaction oxidation and, 366
- Neobiotic acid, isomerization, water on, 271
- Neon isotopes
and alpha emission, delayed, 93
separation of, by thermal diffusion, 75
- Neopentane, carbon tetrachloride system, molecular parameters of, 54
- Neopentyl chloride, molecular structure of, 223-24
rotating sector technique and, 218-19
- Neutron diffraction
antiferromagnetism and, 237-41
ion displacements in, 238
lattices of, 237
magnetic order and, 239
spin alignment and, 238
x-ray diffraction and, 237
- ferrimagnetism and, 239-40
ferromagnetism and, 236-37
magnetic field on, 240
neutron intensity of, 240
magnetic scattering and, 235
paramagnetism and, 235-36
polarization and, 240-41
structure determination by, 241-42
- see also Crystallography;
and X-ray crystallography
- Nickel
aluminum-cobalt-iron alloy, electron concentration of, 212
catalysis by, 294, 299
of cyclohexane hydrogenation, 291
of ethylene hydrogenation, 291
copper alloy, catalysis by, 295
iron alloy
catalysis by, 295
phase diagram of, 203
Nickelous oxide, structure of, temperature on, 238
Nicotinic acid, x-ray sensitization of, 116
Niobium nitride, heat capacity of, 5
Nitramide, catalytic decomposition of, 272
Nitrate
in aqueous solution, reaction rates of, 269
nitrite system, equivalent redox potential of, 109-10
Nitric acid
anhydrous, structure of, 250
aromatic nitration and, 273
monohydrate, structure of, 250
reactions of, kinetics of, 268
Zeeman effect and, 168
Nitrite, nitrate system, equivalent redox potential of, 109-10
m-Nitroaniline, dissociation constant of, 46
Nitrobenzene
cyclohexane system, adsorption of, 62
hydrogenation, catalytic, 296
p-Nitrobenzyl bromide, hydrolysis of, 275
Nitroethane, dissociation rate of, catalysis and, 273
Nitrogen
adsorption isotherm for, on copper, 288
heat of dissociation of, 12
isotopes
microwave spectroscopic analysis of, 68-69, 166
and neutron emission, delayed, 83
separation of, by thermal diffusion, 74
liquid
solid hydrocarbon solubility in, 56-57
vapor pressure of, 22
tetrahedral hybridization of, 180
titanium system, phase diagram of, 24
vapor pressure of, 1
virial coefficient of, 2
Nitrogen dioxide
nitrogen pentoxide reaction with, kinetics of, 268
Zeeman effect and, 168
Nitrogen fluoride, molecular structure of, 220
Nitrogen pentoxide
crystal structure of, 249
reaction kinetics of, 268
Nitromethane vapor, pyrolysis of, 266
p-Nitro-p'-methoxybenzoyl peroxide, decomposition of, 260
m-Nitrosanitrobenzene, polarized spectrum of, 142
Nitrosyl chloride, vapor pressure of, 1
m-Nitrotoluene, hydrochloric acid solubility in, 26
Nitrourethane, saponification, reaction rate of, 269, 270
Nitrous acid
aromatic nitration and, 273
diazotization in, 274
glycine deamination by, 281
isotopic, thermodynamic properties of, 13-14
Nitryl chloride, stability of, 268
Nonane, decane-heptane-hexane-octane system, equations for, 33-34
Nonelectrolytic solutions, 51-63
binary
critical composition and, 54-55
entropy of fusion of, 60
excess chemical potential of, 54
free energy of mixing of, 53
free volume theory of, 54
interaction types and, 53
liquid-vapor systems of, 60-61
properties of, 53
van der Waals equation and, 55
critical phenomena, 62-63
entropy of mixing and, 52
fluorocarbons, 55-57
hydrocarbons, 55-57
of iodine, 57-59
metallic, 61

molecular structure of, 52-53
 solubility of, 6
 surface phenomena of, 61-62
 two-phase equilibria of, 59-61
 eutectic points of, 60
 virial coefficient and, 52
 volume fraction expansions and, 51
 see also Electrolytic solutions; and Solutions
Nuclear theory
 alpha particle decay and, 90-91
 collateral decay chains and, 89-90
 of compound nucleus, 86
 fission, 87-89
 atomic number on, 87
 energy on, 87, 89
 of medium weight elements, 89
 product curve for, 88
 speed of, 88
 neutron binding energy and, 89
 nucleon-nucleon forces and, 94
 nucleus and
 energy surface of, 91
 high energy particle encounters with, 86
 transparency of, 86
 radioactivity and, 83-95
 products of, 86-87
 products of, distribution among, 87-88
 spallation, 86-87
 high energy, 87
 see also Radioactivity

O
Octafluorocyclobutane, molecular structure of, 222
Octane
 decane-heptane system, eutectics of, 32
 decane-heptane-hexanone system, equations for, 33-34
n-Octane
 n-hexadecane system, entropy of mixing of, 55
 tetraethylmethane system
 entropy of mixing of, 55-56
 thermodynamic properties of, 5
Olefins
 aluminum borohydride reaction with, kinetics of, 259
 atomic hydrogen interaction with, 268

halogenation of, catalysis and, 273
 hydrogen mixtures, mercury photosensitization of, 350
 methyl radical and, interaction of, 350
Oscillator, harmonic, thermodynamic functions and, 14
Osmium tetroxide, oxidation catalysis and, 259
Osmotic pressure
 of high polymers, 395-97
 of proteins, 404-5
Oxalic acid, decarboxylation, isotope effect of, 73
Oxidation reactions
 aqueous
 net power of, 111
 radiation and, 107-14
 catalytic, 302-3
 conductivity and, 303
 isotopes and, 302
 by hydrogen ion, 112
 by hydroxyl radicals, gaseous, 112
 kinetics of, 258-59
 peroxides and, 258
 on redox potential, equivalent, 109
 salient features of, 111
 see also Hill reaction; and Photosynthesis
Oxides
 heats of decomposition of, 11
 mixed, catalysis by, 297
 structures of, x-ray crystallography and, 249
Oximes
 formation of, in aryl alkyl ketones, 280
 isomerization of, 279-80
Oxygen
 consumption of
 in photosynthesis, 372
 styrene polymerization and, 259
 dissolved, on organic iodine compound photodecomposition, 357
 on irradiated biological solutes, 114-15
 isotopes of
 abundance of, in calcium carbonate, 69-70
 carbon dioxide-bicarbonate ion, exchange and, 75
 and neutron emission, delayed, 93
 separation of, by thermal diffusion, 74-75
 lead oxide system, equilibria of, 24

liquid, hydrocarbon solubility in, 26, 56-57
 nitric oxide reaction with, kinetics of, 268
 tetrahedral hybridization of, 180
 thermodynamic properties of, 14
 vapor pressure of, 1
 Zeeman effect and, 168
Ozone, decomposition of, kinetics of, 280-81
Ozonide, formation equilibrium constants of, 11

P

Palladium
 gold alloys, para-hydrogen conversion for, 296
 hydrogen adsorption on, electronic behavior and, 290
 nitrobenzene hydrogenation, catalytic, 296
Penninite, structures of, 249
Pentalene, energy level calculations, 137
n-Pentane, perfluoro-n-pentane system, solubility parameters of, 56
Perfluoroheptane, iodine solubility in, 26
Perfluoro-n-heptane
 chlorine in, solubility of, 59-60
 n-heptane-2,2,4-trimethylpentane system, solubility parameters of, 56
Perfluoromethylcyclohexane, carbon tetrachloride system, critical temperature and, 29
Perfluoro-n-pentane, n-pentane system, solubility parameters of, 56
Peroxides, organic
 decomposition of, 260
 kinetics of, 259-64
 and polymerization reactions, initiation of, 259
 wall reaction and, 259
Petroleum, phases, identification and, 34
Phase diagrams
 critical state and, 23
 heterogeneous equilibria and, 21-34
 of tin, 23-30
 o-Phenanthroline, Hill reaction inhibition and, 369
Phenols, alkylation of, tertiary alkyl halides and, 278
 bis-Phenylacetyl peroxide, decomposition of, 262

- Phenylcarbinol, etherification of, in benzene, 278
- Phenylethenes, heats of combustion of, 10
- 9-Phenylthiacarbocyanine, planarity of, 133
- Phosgene, photochemical formation of, 346
- Phosphoglyceric acid, production of, carbon dioxide fixation and, 363
- Phosphorus trichloride, molecular structure of, 155, 220, 226
- Photochemistry, 343-59
- free radical production and, 354
 - methyl radical reactions and, 343-48
 - photosensitized reactions, 348-52
 - polymerization and, 353-54
 - rotating sector technique, theory of, 346
 - single flash technique and, 357-58
 - solar energy utilization and, 359
 - see also Photosynthesis
- Photosynthesis, 361-79
- action spectrum of, 375
 - bacterial chemosynthesis and, 362
 - and carbon dioxide absorption, isotope effect of, 73
 - and carbon dioxide reduction, chemistry of, 363
 - carotenoids and, 374
 - chlorophyll and, 374
 - cyanide on, 372
 - and fluorescence, carbon dioxide on, 362
 - fucoxanthol and, 375
 - Hill reaction and, 364-70
 - mechanism of, 362-63
 - carbohydrate oxidation in respiration and, 363
 - oxygen consumption rate and, 372
 - photosynthetic unit and, 377-78
 - phycocyanins and, 374-75
 - phycoerythrin and, 374
 - pigments and, 374-79
 - energy migration in, 377-79
 - mechanisms of, 376
 - quantum yield and, 375-76
 - spectral yield curves, 376
 - quantum yield of, 370-74
 - conditions for, 371
 - light intensity on, 372
 - measurement techniques of, 373
 - respiration and, 372
 - sources of error and, 371
- quinone poisoning and, 373
- stages of, 361
- see also Carbon dioxide
- Phycocyanins, photosynthesis and, 374-75
- quantum yield and, 376
- Phycoerythrin, photosynthesis and, 374
- Pigments, on photosynthesis, 374-79
- 1-Pimaric acid, isomerization of, water on, 271
- Pinene, isomerization of, rates of, 280
- Plasma
- protein fractionation and, 414
 - prothrombin adsorption and, 414
- Platinum
- catalysis by, ammonia oxidation and, 303
 - tin alloy, structure of, 246
- Plutonium
- formation of, 84
 - naturally occurring, 84-85
 - chemical separation of, 85
 - concentration of, 84
 - isotopes of, 84
 - uranium ratio of, 85
- Polarization
- on catalysis, 297
 - molecular structure on, 141
 - neutron diffraction and, 240-41
 - spectroscopy and, 141-42
 - see also Absorption, light; and Spectroscopy
- Polonium
- isotopes, bismuth spallation products and, 87
 - structure of, 246
- Polyenes, energy level calculations, one-dimensional box method and, 135
- Polyisoprene, heat of dilution of, empirical, 393
- Polymerization
- in aqueous media, 106-7
 - kinetics of, 106-7
 - reaction scheme of, 106
 - copolymerization and, 265
 - heats of, 9
 - initiation of, organic peroxides and, 259
 - by irradiation, 105-7
 - kinetics of, 264-65
 - and rate constants, resolution of, 264
 - rotating sector method and, 264
 - mechanisms of, 303
 - of nonaqueous media, 105
 - photosensitized, 353-54
- chain termination and, 354
- rate of, 105
- dose rate on, 107
- wave length and, 107
- see also Ion exchange polymers; and Polymers, high
- Polymers, high
- entropy of mixing of, 383, 385-86
 - applicability of, 390
 - chain flexibility on, 385, 387
 - empirical, 392
 - heat of dilution of, empirical, 393
 - lattice model of
 - applicability of, 389-90
 - chemical potential and, 389, 390-91
 - empirical comparisons, 391-93
 - entropies of, 384-85
 - heat of mixing and, 387
 - position in, 384
 - standard state free energy and, 389
 - symmetry and, 387
 - theory of, 383-91
- partial molal entropy of, 390
- solutions of,
- applications of, 397-401
 - binary, 397-99
 - critical point of, 400
 - critical temperatures of, 398-99
 - incompatibility of, 399-400
 - melting points and, 401
 - multicomponent, 399-400
 - phase boundary curve for, 398
 - swelling and, 400
 - thermodynamics of, 383-401
 - viscosity of, intrinsic, 400-1
- solutions of, dilute, 393-97
- entropy of dilution of, 394-95
- intramolecular interactions and, 395
- osmotic pressure and, 395-97
- turbidity of, 395
- see also Polymerization
- Polymethacrylic acid, cross-linked, 316
- Polymerization
- Polymethine dyes, energy level calculations, valence bond method, 140
- Polysilicones
- entropies of dilution of, empirical, 391, 392

- heat of dilution of, empirical, 393
- Polystyrene
in benzene, light scattering curve of, 397
in cyclohexane
critical temperature of, 398
precipitation temperature of, 398
divinylbenzene copolymer
exchange capacities of, 318-19
hydration of, 320-21
porosity and, 318
entropies of dilution of, empirical, 391, 392
light scattering parameters for, 396
osmotic parameters for, 396
solutions, osmotic pressures of, 9
in toluene
light scattering curve for, 397
osmotic pressure of, 396, 397
- Porphine, energy levels of, 137
- Potassium
bismuth-lead-magnesium system, 32
chromatographic separation of, 335
solubility of, in liquid ammonia, 61
- Potassium bromide
aqueous solution of, critical temperature of, 25
diffusion coefficient of, 45
urea-water system, phases of, 31-32
- Potassium chloride
activity coefficient of, 47
aqueous solution of, critical temperature of, 25
chloroplast activity stabilization by, 366
diffusion coefficient of, 44, 45
- Potassium chlorochromate, structure of, 250
- Potassium fluoride, ammonium fluoride-water system, 30-31
- Potassium iodide, aqueous solution of, critical temperature of, 25
- Potassium nitrate
diffusion coefficient of, 44-45
ethyl alcohol-water system, volatility and, 31
solubility of, 25
- Potassium permanganate, solubility of, 25
- Potassium sulfate, conductance of, 46
- Potassium thiocyanate, solubility of, 25
- Propane
benzene system, liquid-gas phases of, 27
mass spectrum of, carbon isotope substitution and, 70
mercury photodecomposition of, 348-49
methane system, liquid-gas phases of, 27
thermal cracking of carbon isotope reaction rate and, 71
isotope effect on, 72
- Propene, 1-butene system, liquid-gas phases of, 26-27
- Propiolactone, photodecomposition, products of, 355
- β -Propiolactone
hydrolysis of, 275
nucleophilic reagents on, 280
- n-Propyl bromide, pyrolysis of, 267
- Propylene
ketene vapor photodecomposition and, 356
pyrolysis of, 266
solubility of, in liquid oxygen, 26, 56-57
thermodynamic properties of, 11
- Propylene glycol, chloroplast activity stabilization by, 365
- Protactinium, chromatographic separation of, 335
- Proteins, 404-14
association-dissociation reactions and, 412-413
diffusion of, 406-7
electrophoresis of, 408-9
moving boundary equation and, 408
enzymatic degradation and, 413-14
fractionation of, 414
heterogeneity of, 409, 410
boundary spreading and, 410
constants of, 410
ion binding, 410-11
study techniques and, 411
light scattering of, 405
molecular weight measurement by, 405
lipoproteins, 412
molecular kinetic methods and, 404
molecular weight of, 412-13
- osmotic pressure of, 404-5
proteolysis and, 413-14
sedimentation equilibria of, 405-6
ultracentrifuge and, 406
sedimentation velocity of, 407-8
density on, 407
flotation sedimentation and, 408
solvation on, 407
ultracentrifuge on, 407
shape of, 414
size of, 414
structure of, 412
x-ray diffraction and, 409
see also Colloids
- Pyridine
absorption band of, 144
acetic anhydride system, 29
- Pyruvic acid, Hill reaction
oxidation and, 367
- Q
- Quantum theory, 177-86
bond angles and, 180-81
bent structures and, 181
quadrupole coupling constant and, 180
symmetry resonance on, 181
three-membered rings and, 181
energy level calculations and, 135-40
free electron model and, 185-86
potential on, 185
Goepfert-Mayer and Sklar method, 138-39
configurational interaction and, 138
hybrid orbitals and, 177-80
arbitrary, 178
construction of, 177-78
cylindrical symmetry and, 177, 179-80
diagram of, 179
equivalent, 179
square, 180
molecular orbital method, 135-38, 184
advantages of, 136
configurational interaction and, 139
field types and, 137
low symmetry and, 139
perturbation theory and, 137
nonatomic orbitals and, 181-84
displaced, 182-83
Hartree-Fock equations and, 183-84

- one-dimensional box model
and, 135
Schrödinger equation and,
136
and valence, directed, 177-
80
valence bond method, 139-
40
inaccuracies of, 139
see also Spectroscopy
- Quinone
Chlorella cell oxidation and,
370
and Hill reaction, quantum
requirements of, 368
respiration inhibition by,
373
- R
- Radiation
aqueous oxidation-reduction
reactions and, 107-14
on biological solutes
active agents of, 114-15
indirect action of, 114-17
mechanisms of, 115-16
products of, 115
protection and, 116-17
protein denaturation and,
116
reduction and, 116
sensitization and, 116
bleaching of aqueous dyes
by, redox potentials and,
109
charge diffusion, radial
field and, 102
chemical changes from,
excitation on, 104
chemistry of, 99-117
energy absorption mecha-
nism and, 101-2
ion identification and, 103-
4
and ion pair formation, en-
ergy of, 102
integral chemical dosime-
ter and, 99
in aqueous media, 100
colorimetry and, 100-1
difficulties of, 99
radioactive trace tech-
niques and, 101
requirements of, 99
vinyl polymerization and,
99-100
kinetics of, 104-17
mean track density of, 103
polymerization by, 105-7
primary act of, 101-4
charged and neutral spe-
cies formed in, 102-4
spatial distribution and,
102-3
non-Gaussian distribution
and, 103
- secondary processes of,
primary act products
on, 104
x-ray wave length on, 103
see also Radioactivity
- Radioactivity
alpha
atomic number correla-
tion, 90
half-life energy correla-
tion and, 90
mass number correlation,
90
rare earth elements and,
91
systematics of, 90-91
artificial, delayed emis-
sion and, 93
beta decay, 94-95
Fermi theory and, 94
forbidden spectra and,
94-95
and gamma rays, angular
correlation of, 95
mesons, 95
artificial production of,
93
microwave spectroscopy
and, 153
neutron decay and, 85-86
nuclear theory and, 83-95
products of, 86-87
distribution among, 87-88
transuranic elements, 92-
93
see also Nuclear theory;
and Radiation
- Rare earths, chromato-
graphic separation of,
333-34
- Redox potential, equivalent
complexing agents and, 110
hydrogen-ion concentration
and
on approach rate, 110
on chemical equilibrium,
110
oxygen on, 109
radiation bleaching of aque-
ous dyes and, 109
radical spatial distribution
and, 110
of water, 107-9
oxidation by gaseous hy-
droxyl radicals and, 112
oxidation by hydrogen
molecule ions and, 112
reaction type and, 109
reduction by hydrogen
ions and, 113-14
reduction by hydroxyl
radicals and, 112-13
- Reduction reactions
aqueous
net power of, 111
radiation and, 107-14
on biological solutes, 116
by hydrogen ions, 113-14
by hydrogen peroxide, 113-
14
by hydroxyl radicals, 112-
13
salient features of, 111
see also Hill reaction; and
Photosynthesis
- Rhodium, and nitrobenzene
hydrogenation, catalysis
of, 296
- Rotation, internal, barriers
to, 13
thermodynamic functions
and, 13
- Rubber, entropy of dilution
of, empirical, 392-93
- Rubidium fluoride, beryllium
fluoride system, phase
diagrams of, 24
- S
- Samarium, alpha activity of,
91
- Selenides, structure of, 249
- Serine, deamination and, 117
- Serum albumin
binding of, azo-hapten and,
416
bovine, molecular weight
of, 405
- Silane derivatives, molecu-
lar structure of, 223-24
- Silica
aluminum oxide-calcium
oxide-ferric oxide-so-
dium oxide system,
phases of, 33
ferric oxide-ferrous oxide
system, 30
sodium oxide-water system,
31
- Silica gel, adsorptive capac-
ity of, specific indica-
tors and, 288
- Silicides, structures of, 246-
47
- Siliconcopentyl chloride, mo-
lecular structure of,
223-24
rotating sector technique
and, 218-19
- Siloxanes, molecular struc-
ture of, 224
- Silver
aluminum alloy
electron concentration on,
210
phase diagram of, 209
diffusion coefficient of, 45
fission of, 88-89
vapor pressure of, 2
- Silver iodide, ice crystal
formation and, 418-19
- Silver nitrate, thallium ni-
trate system, liquid

- phase of, 23-24
- Silver perchlorate, benzene complex, structure of, 248-49
- Sodium
 - antimony-lead system, solid phases of, 30
 - antimony-lead-zinc system, 32
 - arsenic-lead system, solid phases of, 30
 - chromatographic separation of, 335
 - diffusion coefficient of, 45
 - on ethane decomposition, 352
 - isotopes, delayed alpha emission and, 93
 - solubility, in liquid ammonia, 61
 - Sodium bromide, diffusion coefficient of, 45
 - Sodium carbonate, sodium chloride-sodium hydroxide-sodium sulfate-water system, isothermal diagram of, 33
 - Sodium chloride
 - activity coefficient of, 47
 - aqueous solution of, critical temperature of, 25
 - diffusion coefficient of, 44-45
 - hyperfine structure of, valence on, 156-59
 - sodium carbonate-sodium hydroxide-sodium sulfate-water system, isothermal diagram of, 33
 - Sodium fluoride
 - beryllium fluoride system, phase diagrams of, 24
 - yttrium chloride system, lattice constants of, 24
 - Sodium hydroxide, sodium carbonate-sodium chloride-sodium sulfate-water system, isothermal diagram of, 33
 - Sodium nitrate, lead nitrate-water system, 31
 - Sodium oxide
 - aluminum oxide-calcium oxide-ferric oxide-silica system, phases of, 33
 - silica-water system, 31
 - Sodium perchlorate, molal volume, characteristics of, 48
 - Sodium sulfate
 - conductance of, 46
 - ethyl alcohol-water system, solubility in, 31
 - ethylene glycol-water system, liquid phases of, 31
 - sodium carbonate-sodium chloride-sodium hydroxide-water system, isothermal diagram of, 33
 - Sodium trifluoroacetate, decarboxylation of, 277
 - Solids
 - heat capacities of, 4
 - low temperatures and, 8
 - paramagnetism and, 4-5
 - physics of, catalysis and, 294-98
 - solubility of, in liquid gases, 24-25
 - superconductivity and, 5
 - thermodynamic properties of, 4
 - Solutions
 - aqueous, ionic reactions in, rate of, 269-70
 - binary, thermodynamic properties of, 7
 - entropy of mixing of, 7
 - heats of mixing of, 6
 - of polymers
 - dilute, 393-97
 - thermodynamics of, 383-401
 - solid, 7
 - thermodynamics of, 5-7
 - see also Electrolytic solutions; and Nonelectrolytic solutions
 - Solvolysis, kinetics of, 274-77
 - Spallation, see Nuclear theory; and Radioactivity
 - Spectrometer, mass, 67-68
 - auxiliary mass spectrometer tube and, 68
 - calibration of, isotopic mixtures and, 68
 - dual sample system and, 68
 - electrical stability of, 68
 - electron multiplier tube and, 68
 - hydrogen-deuterium mixtures, analysis of, 68
 - Spectroscopy, 212-45
 - atomic, 140, 143-45
 - emission, from metastable levels, 143-44
 - energy levels
 - experimental approach, 140-45
 - quantum mechanics and, 135-40
 - and excitation energy, transfer of, 144-45
 - extinction coefficients and, 145
 - Goeppert-Mayer and Sklar method, 138
 - group theory of, 140
 - luminescence lifetime and, 143
 - molecular orbital method and, 135-38
 - advantages of, 136
 - configurational interaction and, 139
 - field types and, 137
 - perturbation theory and, 137
 - symmetry and, 139
 - one-dimensional box model and, 135
 - perturbation effects, 137, 141, 145
 - Schrödinger equation and, 136
 - sensitized fluorescence and, 144
 - symmetry and, 141-43
 - polarized light on, 141-42
 - vibrational analysis and, 142-43
 - ultraviolet, vacuum, 145
 - valence bond method and, 139-40
 - see also Absorption, light; Microwave spectroscopy; Molecular structure; and Quantum theory
 - Squalene, heat of dilution of, empirical, 393
 - Stark effect, microwave spectroscopy and, 152
 - Steric hindrance
 - absorption on, 132-34
 - planarity on, 132-34
 - Styrene
 - and butyl acrylate, photosensitized copolymerization of, 354
 - cyclohexyl hydroperoxide decomposition in, 262
 - dimethylphenylmethyl hydroperoxide decomposition in, 262
 - divinylbenzene copolymer exchange groups and, 315
 - maleic anhydride and, 316-17
 - preparation of, 312-14
 - structure of, 314
 - hydrogenation, iron-nickel catalysis of, 295
 - and methyl methacrylate, photosensitized copolymerization of, 353-54
 - monomer, dimethylphenylmethyl hydroperoxide decomposition in, 261
 - polymerization of oxygen consumption and, 259
 - photosensitized, 105, 264, 353
 - x-ray actinometry and, 99-100
 - Sucrose
 - diffusion coefficient of, 44
 - inversion of, specific interaction and, 270-71

- Sucrose octaacetate, alkaline hydrolysis of, 276
- Sulfamate ion, hydrolysis of, 276
- Sulfur
- compounds, structures of, 249
 - isotopes of sulfur dioxide-bisulfite ion, exchange and, 75
 - variations in, 70
 - rhombic, physical properties of, 11
 - thermodynamic properties of, 14
- Sulfur dioxide
- and aliphatic hydrocarbons, gas phase photochemical studies of, 355
 - molecular structure of, isotope effect and, 155
- Sulfuric acid
- dimethylphenylmethyl hydroperoxide decomposition in, catalysis of, 261
 - ferrous ions in, oxidation of, 101
- Sulfur trioxide, water system, solid phases of, 25
- Surfaces
- of catalysts
 - heterogeneity of, 293-94
 - homogeneity of, 292
 - chemistry of, 287-303
 - interfacial tension and, 62
 - of nonelectrolytic solutions, 61-62
 - quasi-crystalline lattice model of, 61-62
 - statistical mechanical theory and, 61
 - surface tension and, 62
 - thermodynamics of, 7-8
 - see also Adsorption; and Catalysis
- T
- Tantalum, chromatographic separation of, 335
- Tellurides, structures of, 249
- Terbium, alpha activity of, 91
- Tetrachloroethylene, trichloroethylene system, Raoult's law and, 28
- Tetracosane, cis-decahydronaphthalene system, freezing point of, 60
- Tetradecane, hexadecene system, Raoult's law and, 28-29
- Tetraethylmethane, n-octane system
- entropy of mixing of, 55-56
 - thermodynamic properties of, 5
- Tetrafluoroethylene
- molecular structure of, 218, 221-22
 - polymerization of, on acet-aldehyde photodecomposition, 354
- Tetrahydropyran, molecular structure of, 227
- Tetramethylammonium bromide, bromine system, phases of, 26
- Tetramethylorthosilicate, molecular structure of, 224
- Thallium isotopes, separation of by electrolytic migration, 76
- Thallium nitrate, silver nitrate system, liquid phase of, 23-24
- Thallous fluoride, heat of solution of, 13
- Thermal diffusion
- isotopic separation and, 74-76
 - see also Diffusion
- Thermodynamics, 1-14
- harmonic oscillator and, 14
 - of high polymer solutions, 383-401
 - high temperature heat capacities and, 9
 - phase behavior and, 29
 - third law of, entropies from, 9
- Thiazole, high basicity of, on color deepening, 126
- Thiosulfate, bromide reactions with, kinetics of, 280
- Thiourea, molecular addition complexes of, 248
- Thorium
- fission, product curve for, 88
 - spallation products, francium isotopes and, 87
- Thorium dicarbide, crystalline structure of, 241
- Thorium dihydride, crystalline structure of, 241
- Threonine, molecular configuration of, 228
- L-Threonine, structure of, x-ray crystallography and, 244
- Tin
- fission of, 88-89
 - lithium isotopes and, 89
 - gold system, liquid, 61
 - liquid mixtures of, ultrasonic sound velocities in, 61
 - phase diagrams of, 23
 - platinum alloy, structure of, 246
- Titanium
- carbon system, phase diagram of, 24
 - nitrogen system, phase diagram of, 24
- Toluene
- entropy of dilution in, empirical, 391, 392
 - on ethylbenzene pyrolysis, 265-66
 - heptane-methylethylketone system, thermodynamic consistency of, 32
 - methyl radical reaction with, steric factor for, 268
 - polystyrene in
 - light scattering curve for, 397
 - osmotic pressure of, 396, 397
 - p-Toluenesulfonyl chloride, cellulose esterification with, 277
 - p-Toluidine, dissociation constant of, 46
- Tourmaline, structure of, 249
- Transuranic elements
- berkelium, chemical properties of, 92
 - californium, chemical properties of, 92
 - elution positions, spacing of, 92-93
 - vapor pressure of, 2
- 1,1,1-Trichloroethane, pyrolysis of, 267
- Trichloroethylene, tetrachloroethylene system, Raoult's law and, 28
- Triethylene glycol, water system, equilibria of, 25
- 1,1,1-Trifluoroethane, rotational barrier of, 13
- Trifluoromethyl benzoic acid, diphenyldiazomethane reaction with velocity constants of, 277
- Trimethylaluminum, structure of, 247
- Trimethylamine, vapor pressure of, 2
- 2,2,3-Trimethylbutane, benzene system, 29
- 2,2,4-Trimethylbutane, negative azeotropy of, 57
- 2,2,4-Trimethylpentane
- n-heptane-perfluoro-n-heptane system, solubility parameters of, 56
 - n-hexadecane system, entropy of mixing of, 55
- 2,4,4-Trinitrotoluene, vapor pressure of, 2
- Triphenylmethyl fluoride, hydrolysis of, catalysis and, 272
- Triphenylsilyl fluoride, hydrolysis of, catalysis of, 272

Triphosphopyridine nucleotide, Hill reaction reduction and, 366-68

Tritium
on chemical equilibria, 71
compounds of, thermodynamic properties of, 13
radioactivity of, 83-84
see also Deuterium; and Hydrogen

Trypaflavine, sensitized fluorescence and, 144

Tungsten
adsorption on, 289
of hydrogen, 289, 290
heat capacity of, 5

U

Uranium
fission, product curve for, 58
plutonium ratio of, in ores, 85
and spallation, high energy, 87
and transition elements, structures of, 246

Uranium fluoride, structure of, 250
Uranium hydride, hydrogen positions in, 241-42

Urea
isotope effect of, reaction completion and, 73
molecular addition complexes of, 248
planarity of, 225
potassium bromide-water system, phases of, 31-32

Urea nitrate, isotope effect of, reaction completion and, 73

V

Valence
on hyperfine structure, 156
microwave spectroscopy and, 156-60

Vapor pressure
determination of, 22-23
equilibrium temperature and, 23

of gases, 1-2

Vinyl acetate
acetaldehyde-acetone-water system, graphic representation of, 33
polymerization of, 264
photosensitized, 353
x-ray actinometry and, 99-100

Vinyl allyl ether, rearrangement of, 279

Vinyl chloride, conjugation and, 159

Vinyl fluoride, polymerization of, on acetaldehyde photodecomposition, 354
Vitamin K, x-ray sensitization and, 117

W

Water
acetaldehyde-acetone-vinyl acetate system, graphic representation of, 33
acetic acid-calcium chloride system, volatility and, 31
aluminum nitrate-n-hexanol system, water activity in, 31
ammonium fluoride-potassium fluoride system, 30-31
ammonium nitrate-calcium nitrate system, 31

benzoic acid-o-xylene sulfonate system, solubility in, 32
bond angles in, 180
calcium carbonate crystallization from, temperature on, 69-70
equivalent redox potential of, 107-9

electron capture by solute and, 111
oxidation by hydrogen molecule ions and, 112
oxidation by hydroxyl radicals, gaseous, 112
reaction type and, 109
reduction by hydrogen ions and, 113-14
reduction by hydroxyl radicals and, 112-13

ethane in, solubility of, 26
ethyl alcohol-potassium nitrate system, volatility and, 31
ethyl alcohol-sodium sulfate system, solubility in, 31

ethylene glycol-sodium sulfate system, liquid phases of, 31
ethylene oxide system, 28
furfural system, solubility of, 27-28

hydrogen peroxide system, solid solutions and, 25
lead nitrate-sodium nitrate system, 31
methyl alcohol system, coal tar component solubilities in, 32

oxidation-reduction reactions in, 107-14
photo-oxidation of, ceric ions and, 358
photo-reduction of, europi-

um and, 358-59
potassium bromide-urea system, phases of, 31-32
potassium salt solubility in, 25
silica-sodium oxide system, 31
sodium carbonate-sodium chloride-sodium hydroxide-sodium sulfate system, isothermal diagram of, 33
sulfur trioxide system, solid phases of, 25
supercooled, ice crystal formation and, 418
triethylene glycol system, equilibria of, 25
Wurster's blue, polarized spectrum of, 141-42

X

Xanthinol ureide, isotope effect of, reaction completion and, 73

Xenon
isotopes, thermal diffusion separation of, 75
resonance lamp, 352

X-ray
on carboxypeptidase, 117
glycine deamination and, 117
polymerization by, 105
X-ray crystallography, 242-45

electron-deficient compounds and, 247-48
electron density and, 243
electronic Fourier synthesizers and, 242-43
equipment for, 244-45
high-pressure techniques, 245
high-temperature techniques, 245
image seeking functions and, 243-44
intensity distribution method of, symmetry and, 244
of minerals, 249
molecular complexes and, 248-49
and nonpolar gases, hydrates of, 248
of oxides, 249
phase angles and, 243
punched card techniques and, 242
structure determination by, 242-50
of graphite, 247
of metals, 245-47
of selinides, 249
of semimetals, 246-47
of sulfides, 249

of tellurides, 249
of L-threonine, 244
see also Crystallography
o-Xylene sulfonate, benzoic
acid-water system, sol-
ubility in, 32
p-Xylene, iodine solubility
in, 26

Y

Yttrium chloride, sodium flu-
oride system, lattice
constants of, 24

Z

Zeeman effect, rotational
magnetic moment and,
167
Zinc
aluminum alloy
electron concentration on,
210
phase diagram of, 209
antimony-lead-sodium sys-
tem, 32
copper alloy
electron concentration of,

208

structure of, 206-7, 208
heat capacity of, 5
Zinc oxide
catalysis by, 294, 299
conductivity of, 297
Zinc sulfate
aqueous, thermodynamic
properties of, 4
hydrated, randomness of, 4
Zirconium, chromatographic
separation of, 334-35
Zirconium dihydride, crys-
talline structure of, 241

